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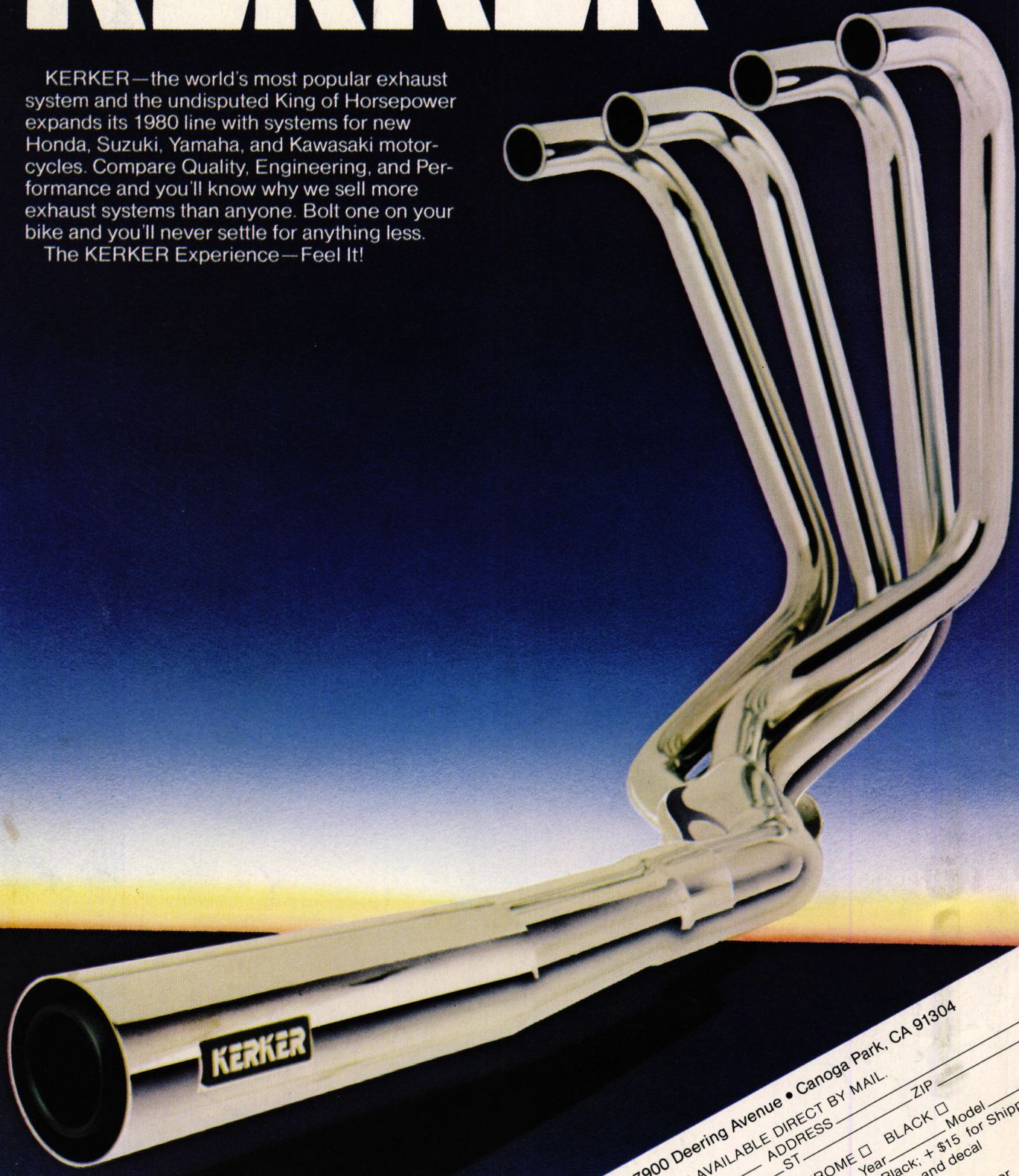

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Contributing Artists
Patrick Behar, Richard George, Joe Gomez, Gary McAllister, Len Weed

Contributing Editors
Doug Jackson, George Larson, John Long, Merry MacTavish, Ted West, Terry Whytal

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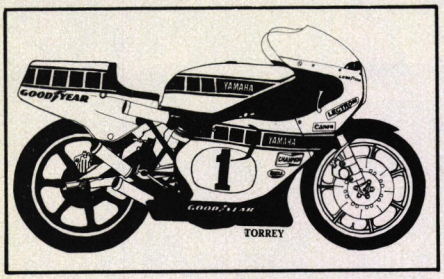

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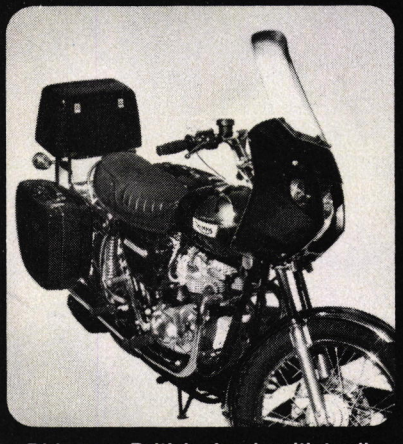

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CYCLE GUIDE'S CYCLE GUIDE

OFF-ROAD

MAKE & MODEL	ISSUE	ENGINE TYPE	WHEEL TRAVEL, IN. FRONT/REAR	WEIGHT, LBS	HORSEPOWER @ RPM*		GEARS
Can-Am 175 Qualifier	Aug. '78	Two-str.	7.7/7.1	234	16.4	9000	6
Can-Am 250 MX-5	Jan. '79	Two-str.	10.8/10.0	218	32.1	8500	5
Can-Am 250 Qualifier III	Feb. '80	Two-str.	9.7/9.8	230	25.2	8000	6
Honda CR125R	Jan. '80	Two-str.	11.5/10.8	202	20.8	10500	6
Honda CR250R	May '80	Two-str.	11.8/11.0	222	27.5	7000	5
Honda XL185	March '79	Four-str.	7.4/6.75	239	11.2	7500	5
Honda XL250S	Oct. '78	Four-str.	7.8/7.7	262	14.8	8000	5
Honda XR185	March '79	Four-str.	8.0/7.75	221	12.8	10000	6
Honda XR500	May '79	Four-str.	8.5/8.6	273	25.8	6500	5
Husqvarna 125CR-'80	Nov. '79	Two-str.	11.8/11.8	214	18.8	11000	6
Husqvarna 250CR	Dec. '78	Two-str.	11.8/11.8	227	24.3	8500	6
Husqvarna 250WR	Aug. '79	Two-str.	9.5/9.5	238	21.9	6500	6
Kawasaki KLX250	Sept. '79	Four-str.	9.8/10.5	239	15.2	8500	5
Kawasaki KX125 A5	Oct. '79	Two-str.	9.8/10.0	194	20.0	11000	6
Kawasaki KX250 A5	June '79	Two-str.	11.0/10.9	219	27.9	8000	5
Maico 400 MI	April '80	Two-str.	12.3/12.0	233	35.5	7000	5
Maico 450MI	April '80	Two-str.	12.3/12.0	236	37.0	7000	5
Montesa Cappra 414 VE	Oct. '79	Two-str.	10.9/10.7	236	28.5	6500	4
Suzuki PE175	Aug. '78	Two-str.	8.8/9.4	216	11.2	9000	6
Suzuki RM125T	Dec. '79	Two-str.	11.2/11.7	200	19.8	10500	6
Suzuki RM250N	May '79	Two-str.	11.2/11.8	218	27.1	8000	5
Suzuki RM400N	Sept. '79	Two-str.	11.2/11.8	229	28.1	7500	5
SWM 175 ISDT	Aug. '78	Two-str.	10.0/10.0	220	17.3	9500	6
SWM 250 MX	Nov. '78	Two-str.	10.0/10.0	216	29.5	9000	5
Yamaha Pro-Tec 600	Nov. '79	Four-str.	10.5/10.1	262	46.2	6500	5
Yamaha IT175F	Aug. '78	Two-str.	7.2/7.2	217	15.7	9000	6
Yamaha IT250G	Dec. '79	Two-str.	9.8/9.8	244	27.7	8000	6
Yamaha YZ250G	March '80	Two-str.	11.2/11.6	217	29.6	8000	6
Yamaha YZ400F	Feb. '79	Two-str.	10.7/10.4	226	36.9	7000	5

*Horsepower shown is taken at the rear wheel and does not account for transmission losses between the engine and rear wheel. These results may differ from manufacturer's claims or from results obtained using a different dynamometer.

STREET

MAKE & MODEL	ISSUE	ENGINE TYPE*	QUARTER-MILE, SEC./MPH	TOP SPEED, MPH	WEIGHT, LBS	FUEL CONSUMPTION, MPG	STOPPING DISTANCE FROM 60 MPH, FT.
BMW R80/7	Oct. '78	2C	13.47/97.9	104	442	38-46	138
BMW R100T (Dressed)	Aug. '79	2C	13.81/92.9	119	521	38-53	142
Ducati Darmah	Sept. '78	90-deg. 2D	13.41/97.5	118	487	25-40	120
Dunstall-Suzuki GS1000 CS	July '79	4A	11.32/117.0	154	488	37-.5	124
H-D CLE Sidecar	Sept. '79	45-deg. 2D	17.60/69.3	91	1036	25-35	181
Honda CB400T Hawk	March '80	2B	14.37/88.6	100	391	51-65	139
Honda CX500	Feb. '78	80-deg. 2E	13.86/93.4	106	449	28-50	134
Honda CX500 Custom	Aug. '79	80-deg. 2E	14.12/92.9	102	468	44-51	146
Honda CB650	Feb. '79	4A	13.29/99.9	113	447	37-51	131
Honda CB650 Custom	Dec. '79	4A	13.10/99.8	113	447	44-52	131
Honda CB750F	Oct. '79	4A	12.41/106.8	128	524	31-52	135
Honda CB750K	Nov. '79	4A	12.77/105.8	124	525	38-52	130
Honda Interstate	March '80	4C	13.40/96.0	121	718	33-45	146
Honda CBX	Dec. '79	6A	11.86/114.5	130	555	19-36	145
Kawasaki KZ650 Custom	May '79	4A	13.16/100.2	116	483	45-49	125
Kawasaki KZ750	May '80	4A	12.50/107.8	127	471	39-50	134
Kawasaki KZ1000 MkII	April '79	4A	12.06/110.3	130	545	34-46	129
Kawasaki KZ1000 ST	April '79	4A	12.23/111.0	132	574	38-45	130
Kawasaki Z1-R	April '80	4A	12.24/110.6	130	552	35-48	131
Kawasaki KZ1300	March '79	6A	11.79/115.7	140	664	31-39	133
Laverda 1200 Jota	Dec. '78	3A	12.54/105.0	121	518	29-37	145
Suzuki GS450 ST	May '80	2B	14.09/92.5	100	397	55-57	127
Suzuki GS750LN	Sept. '79	4A	12.87/103.5	120	526	41-50	129
Suzuki GS850N	March '79	4A	12.81/104.0	116	566	35-45	153
Suzuki GS1000EC	Nov. '78	4A	12.15/110.9	131	520	31-49	126
Suzuki GS1000LN	June '79	4A	12.39/108.4	130	526	39-50	129
Suzuki GS1000S	July '79	4A	12.43/110.0	132	539	39-45	124
Suzuki GS1100ET	April '80	4A	11.43/118.3	140	544	37-49	116
Triumph Bonneville	Dec. '78	2B	13.41/96.2	110	414	42-49	NA
Triumph Bonneville Special	July '79	2B	13.94/96.2	110	411	45-55	175
Yamaha RD400F	June '79	Two-str. 2B	14.16/90.2	98	355	30-43	129
Yamaha SR500E	April '78	1B	14.98/84.2	92	364	49-58	132
Yamaha TZ750E	April '79	Two-str. 4A	11.62/125.5	180	331	NA	NA
Yamaha XS850LG	Feb. '80	3A	13.10/101.7	116	548	42-55	144
Yamaha XS1100F	Nov. '78	4A	12.12/111.9	134	573	29-47	136
Yamaha XS1100SG	Jan. '80	4A	11.94/112.6	135	572	42-47	129

*A-Transverse Vertical, B-Vertical, C-Horizontally Opposed, D-Tandem Vee, E-Vee

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Editorial

Restoring the Past

Give us more shrines and fewer showrooms

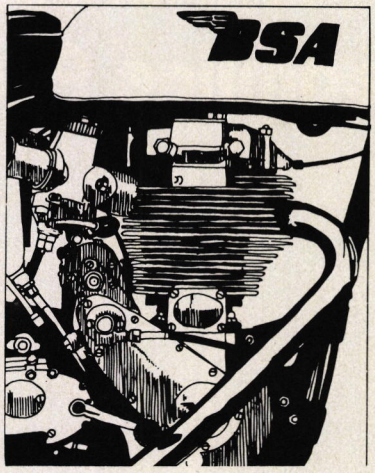
• Maybe you heard that the Yamaha YZR750 that carried Kenny Roberts to victory circle at Daytona in 1978 met an untimely end recently. The word came from the highest levels to destroy the evidence, so the bike was sacrificed to the jaws of the shredder. The same fate befalls every Yamaha works machine no matter what it's accomplished, from the YZ125 that Bob Hannah rode to his first national championship to the YZR500 that carried Roberts to a world championship.

Yamaha isn't the only manufacturer to destroy its past, though. The Honda 750 that Dick Mann used to conquer Daytona in 1970 met the same sort of end several years ago. A squad of hired goons wielding sledgehammers literally smashed the bike to bits, reducing a finely crafted racing machine to a heap of exotic rubble.

There are perfectly good reasons for pursuing this practice, of course. Something about covering your tracks and making sure that secret technology doesn't fall into the hands of the enemy, I believe. But every time some notable racing bike founders on the rocks of bureaucratic policy and sinks into oblivion, I know that another irreplaceable scrap of motorcycle history has slipped through my fingers. I feel the same way whenever I see an abused Yamaha R5 in a salvage yard, a neglected Triumph Bonneville on the street or even a tired CZ 400 in the back of some dirt rider's pickup.

I'm learning painfully that motorcycle history no longer belongs exclusively to the old. And that vintage motorcycles are no longer the sole guardians of the past. And I'm not alone. It seems that the sheer quantity of people who have had an experience with a motorcycle since 1960 insures that more people than ever before are aware of the motorcycle as an historical artifact. Sure, there's a vital underworld of real vintage bike enthusiasts, indicated by the growing phenomenon of classic bike meets and, in England, the establishment of a magazine devoted to the past called *Classic Bike*. But interest in oldies-but-goodies has taken a hold on the everyday rider's imagination, too. More people than you would expect care about the ugly fate reserved for bikes as divergent as a Kawasaki Samurai and Roberts' YZR500.

The rise of vintage racing organizations is just one indication of the broad appeal of the old-bike scene. Even more compelling is the number of private motorcycle collections. Sometimes the motivation behind a collection is monetary—as with the caches



of rare Ducatis, so often discussed but so seldom seen. Sometimes the motivation is merely sentimental—as with the odd Bultaco or Husky Desert Master secreted away in the forgotten recesses of a garage. But the devotion to bikes that either have played an important role in the motorcycle's technological evolution, or in our own evolution as riders, seems to be apparent in nearly everyone I meet. Even the riders of this staff have been infected with a growing reverence for the past.

You might think that lust for the latest bon-bons from the production line would have wiped our mental slates clean of any maudlin attachment to elderly motorcycles, but several of us have an old bike squirreled away. Gingerelli has one of his first racing bikes, a Suzuki X-6 Hustler, up on blocks in his garage. Paul Dean still has an OSSA shorttracker that he crafted from the ground up. And I own something as mundane as a Penton 125, the first brand-new toy that I ever bought for myself. Many times our discussions of a motorcycle's particular merits, like a Suzuki GS1100's for example, are suffused with wistful references to purchasing such a bike and just holding onto it. And always we seek an excuse to buy the next motorcycle without selling the previous one.

While enthusiasm for old motorcycles flourishes on every level, however, no major collection of motorcycle history exists anywhere—at least not to my knowledge. You'd have better luck locating Superman's Fortress of Solitude than a major collection of significant bikes and associated lore. The Isle of Man has a collection of bikes important to its history, of course, and Harrah's Automobile Collection in Reno, Nevada has a clutch of bikes, but on the whole no stash of motorcycling's lore exists to feed the flames of two-wheel enthusiasm.

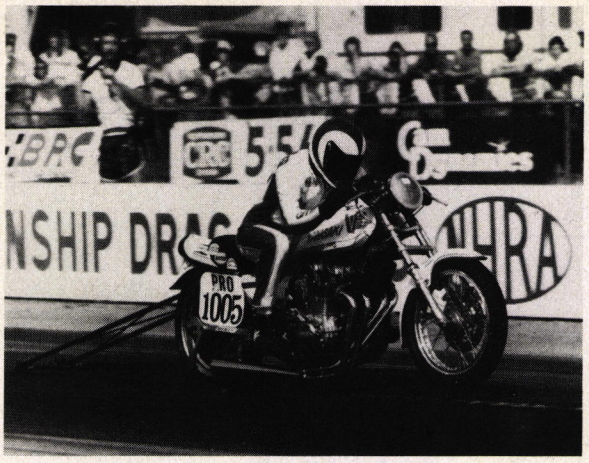
Lamentably, the manufacturers of motorcycles themselves, those most able to kindle the flame of enthusiasm in a museum format, have done little to establish shrines of motorcycle history. Harley-Davidson has a small collection open to the public at its York, Pennsylvania factory, but out back, in a barn, a comprehensive collection of Harleys languishes unrestored. BMW displays only a few bikes as part of its small but jewel-like museum in Munich. Honda's collection of its early models resides in a drab corner of one of its manufacturing plants, testimony to good intentions quietly forgotten. For the rest, sheds full of mechanical memorabilia and engineering blueprints mark the graves of important motorcycles from the past.

Of course, no piece of hardware has been as ephemeral as the motorcycle, each year's success forgotten in the stampede to refine, improve and replace. Much of what we value about the way motorcycles are built is based upon this relentless assault on perfection. But in marching so determinedly upon the future, we are in danger of losing our past, creating unwittingly a rootless generation of motorcycle riders who regard their mounts with no more affection than they would a table saw. Yet as the British have shown us by example, a strong feeling for the lore of motorcycles and old bikes themselves reinforces the enthusiasm of the present. Every owner of a British motorcycle clings to it because of its tradition. And even the assaults of social engineers and safetycrats cannot dissuade him.

So it seems to me that one of the most worthwhile investments that can be made in motorcycling's future is an investment in its past. We need a little emphasis on tradition around here. I hope the bike manufacturers will lead the way, but in the meantime I expect to do my bit by rescuing at least one bike from the ravages of time. It doesn't have to be an old bike—only a good one. As so many collectors and restorers and enthusiasts have already discovered, a motorcycle is more than a collection of nuts and bolts.

The Museum of Natural History in London, England happens to agree with me. It's the home of Mike Hailwood's spine-chilling Honda Six 500cc GP racer, one racing bike plucked from the maw of oblivion. In many ways, its a shrine. And actually, I'd like to see a few more old-bike shrines around here, and a few less new-bike showrooms.

—Michael Jordan



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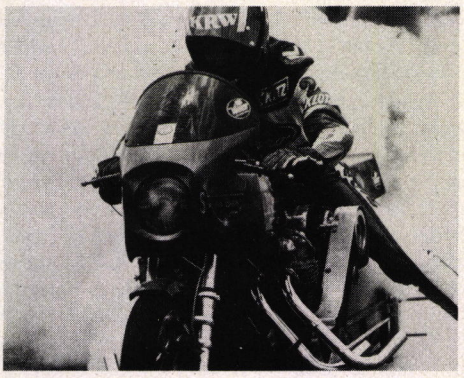

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And as if to confirm all this sappy perfection, the engine caught on the very first turn. It idled on and on, warming itself obediently, like a good and faithful Golden Labrador begging my approval.

After a moment or two, I rolled the power on gently. Warmed up already. *Good* fella.

I turned downhill and cracked the throttle open. Wide open. Within a block I was at top speed, the engine straining against its own limits, encouraged to madness by the steep hill plummeting into San Pedro in front of me like the take-off ramp of a 90-meter ski-jump. The speedometer needle twisted further and further around, jazzed, reaching for Infinity, and still I held the throttle hard open, as I raced down the hill, in Coo-Coo Heaven, loony as Lothar's spaniel, streaking into town at 42 miles an hour. . . .

Wait a minute—42 miles an hour! What is this, you ask, some feeb's suicide fantasy? The Famous Last Ride of Herk Merkle?

Naw—just mopeddin'

But wait *another* minute, you rage! That's Misleading Journalism! You had me going at least 120!

Exactly my point.

See, you think 42 miles an hour is an insult to your intelligence. Admit it. There's nothing exciting to you about 42 miles an hour, *ever.* 42 miles an hour is what mommies in station wagons with screeching brats in the back seat go when they're driving home from Monkey Wards. 42 miles an hour is only exciting if you're doing it on hands and knees!

And yet here I was, riding down the hill into San Pedro at 42 miles an hour, the little Honda moped buzzing madly beneath me like 30 pounds of ants farting in quick-time . . . and I was having the absolute saucer-eyed time of my life!

(I realize a certain number of you will have to go out behind the barn now and pound your chests awhile, just so's nobody'll suspect *you* ever thought 42 miles an hour could be neat. I understand. Macho is hell.)

But for the rest of us who stay behind, I'd like to suggest something really revolutionary. Namely, that speed is relative.

(Aw, crud, you say, he's getting *mysto* again!)

Maybe. But then, I've done my time on the back of a bike at 140. And I've had my share of bruises from pounding my chest, too. Yet, as this puny little 50cc Honda with just enough horsepower to drag a kitten to milk fizzed its way down the hill—not much faster, I might add, than a golf ball would've made the trip if you gave it a good roll—I began noticing things. Odd things. For instance, the saucer-eyed exhilaration I got from this moped was almost identical to the feeling I had blasting down the front straight of Lime Rock one afternoon on a turbocharged Z-1 at 140.

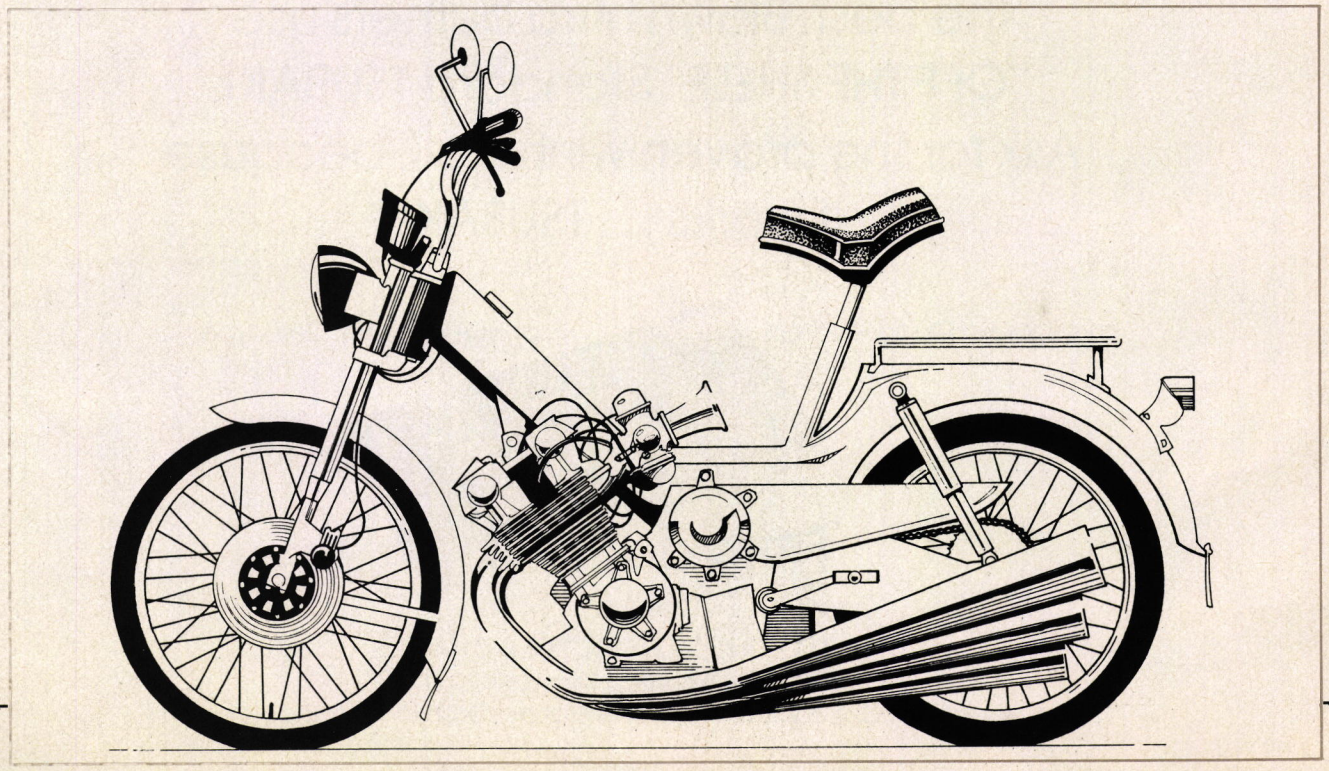
Well, not *identical,* of course. I mean, the thought of blowing a tire at 140 just naturally puts some private muscles to work at the lower end of your digestive tract that 42 miles an hour simply *cain't git.* Granted, this afternoon there was no sensation of imminent mortality.

But otherwise, an alarming number of the sensations of going 140 on that turbo, and 42 on this ant-powered Honda, were—Jeeze Crice!—the *same.* It was a puzzlement. So when I got down to the flatlands of San Pedro and the Honda slowed to its more normal mid-thirties top speed, there was time for thinking.

And what I thought was this.

You and I spend a lot of energy deciding exactly what bike is The Bike, The *Only* Bike—and after all, that's what enthusiasts are all about, nothing wrong with it. But if you go on doing that long enough and hard enough, you can lose sight of why you became an enthusiast in the first place. You can get so lost in how far the speedometer needle twists, how much the wind pressure makes your nose sag, how high on the armor-penetration scale your bike gets at top speed, that it takes some ball-bustingly humble little device like a moped to bring you back to earth.

But the instant you're back, you remem-



ber it all in a flash. It all comes down to, um, two wheels.

That's right, two wheels. Simple as that.

Think about it a second. The sensations of riding a two wheeler, any two wheeler, are plain unique. The instant you climb aboard, you're taking responsibility just for keeping the thing standing up! From there on, you're feeling things you don't feel on any other kind of vehicle, critter or drug in the world. To begin with, you're out in the open air—which can happen on several critters and drugs, of course, but damn few vehicles. When you accelerate or slow down, you don't have to look at some dumb dial, because the rush of the air tells you the whole thing. When you turn, you influence the turn with the weight of your own body. I could think of 100 ways to say it, and you could probably think of 100 better ways, but it always comes back to the same simple thing—two wheels. On two wheels, you're forced to do unique things, things we all collectively enjoy, and things that people who don't ride two-wheelers can't imagine at all. To them, therefore, two-wheelers are just crude. Cold and damp. Dangerous. To them, it's clear. If we could only afford it, we'd get us something good . . . like a rill nass Chivalay *seedan.*

Well, you must know better than that, elsewise you wouldn't be tying up hard-earned money in this magazine but saving up for that Chivalay *seedan* instead.

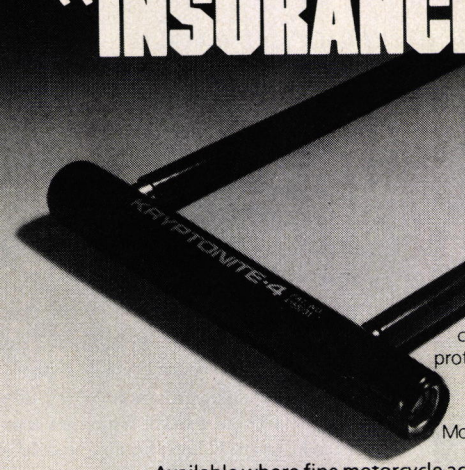
On the other hand, if you ever get to feeling that there's only one kind of bike that's good, and all the rest are *no* good—and the world is jammed with bikers like that, so don't be too sure you aren't one of them—then you're missing out on something basic. Namely, the Love of Two Wheels. In all the hysteria of counting how many more or less valves per cylinder you've got than the next guy, etc., etc., it's an easy thing to forget.

If that's happened to you, though—if it's even *started* to happen to you—then I have the absolute universal cure. There's no surer, quicker, easier way to get back in touch with the Love of Two Wheels than to find an ant-powered moped some afternoon and go out for a two-hour fizz-around. It won't thrill you like a CBX, won't slingshot you off corners like a GS, won't cruise you to Zanzibar like a nice shafty XS.

But it'll remind you in two short hours exactly why you got into motorsickles in the first place—not simply for 12-second quarters, or second looks from pretty ladies, or chrome airboxes, room-size saddlebags or trick motocross boots, but because there's just no way to get from here to there that makes you feel as alive, and forces you at the same time to take as much responsibility for *staying* alive, as riding on two wheels. Believe me, if riding around at 42 miles an hour powered by 30 pounds of ants can still be fun, then there's really something to it.

—Ted West

THE KRYPTONITE "INSURANCE POLICY"*



The Kryptonite Motorcycle Lock is designed specifically to prevent motorcycle theft. "We couldn't file, hacksaw or break it with bolt cutters . . . ", says Cycle Magazine.** Made with high strength alloys, it's lightweight, convenient to carry, and is covered with a rich, thick protective vinyl coating. It's easy to operate and can be installed in seconds.

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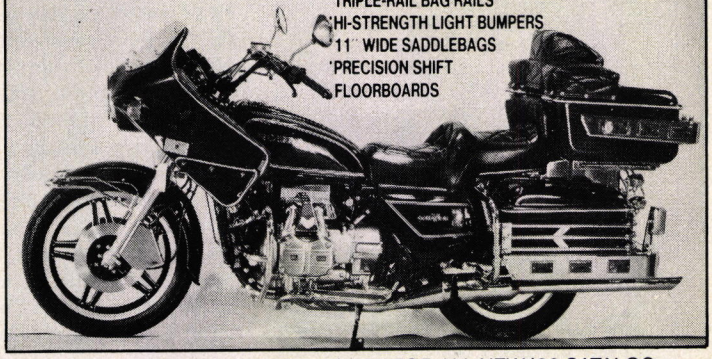

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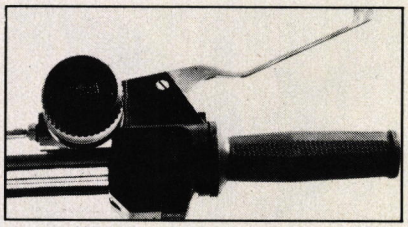
Motomart

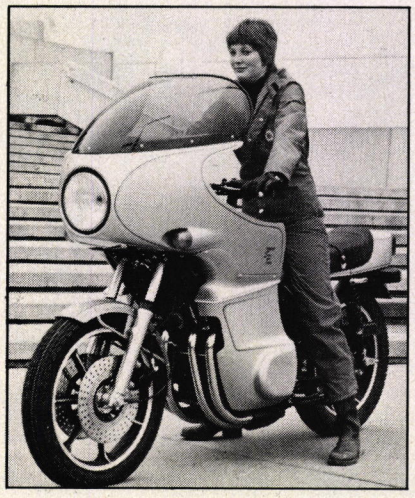
Examining the limits of aftermarket excess

Too Hot To Handle: Castre Incorporated has introduced another in its line of motorcycle gloves. Model C-8000 Hot-Cross gloves feature leather construction, double-stitched seams, a terry-cloth wrist band and an adjustable Velcro closure. The back of the glove fingers and hand are nylon- and cotton-laminated to maximize comfort in hot weather. See your dealer or contact Castre at 836 Flory Mill Road, Dept. CG, Lancaster, Pennsylvania 17601. The phone number is (717) 569-4546.



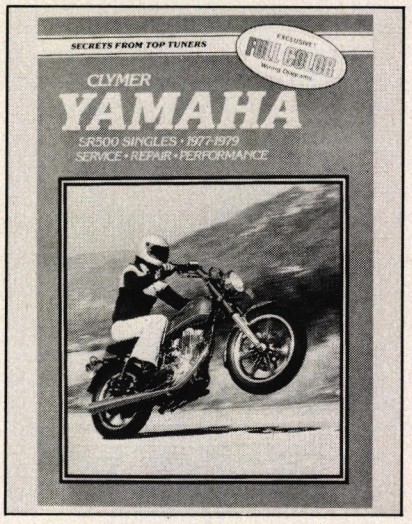
Grab Onto This: Magura is marketing this hydraulic disc brake/master cylinder/throttle combination. The unit pictured includes Magura's electrical switch, which incorporates the kill switch, horn button, headlight switch and high/low beam switch; it is prewired and sold separately. The entire control is condensed into one unit that is 9½-inches long. The assembly is designed to fit any ⅞-inch handlebar. It can be used with one or two hydraulic hoses attached. The brake and master cylinder unit is forged from aluminum alloy and the entire assembly includes Magura's Pow-R-Grip. For more information contact your Magura distributor or write directly to Magura USA Corporation at P.O. Box 337, Dept. CG, Milroy, Pennsylvania 17063.

PJ1's Newest Lube: If you've noticed a can of PJ1 without the familiar yellow-and-black label it's probably Blue Label chain lube from PJ1. The new goop is formulated to benefit rubber O-ring chains and to keep the O-rings moist and pliable. The folks at PJ1 say the new formula is sticky and tacky so it won't fly off the chain onto the wheel, sprocket or rider. If you don't see the eight-ounce aerosol can at your local dealer contact PJ1 at 5955 DeSoto Avenue, Dept. CG, Woodland Hills, California 91367. You can call PJ1 at (213) 887-6704.



Hannigan Fairing: This fairing, originally designed for BMWs, is available now for most Japanese motorcycles. The Hannigan STe fairing is made of handlaid fiberglass with a black or white gelcoat. Features include integral turn signals/running lights, three covered storage compartments, a clear or smoke acrylic windscreen, a windscreen-mounted spoiler and triangulated-steel fairing mounts. This wind-breaker also accepts your motorcycle's original headlight. For more information contact the Hannigan Fairing Company, 1525 Warden Avenue, Dept. CG, Scarborough, Ontario, Canada M1R 4Z8.

Fog Free: When little cat feet bring fog to the inside of your visor you might find Nava's Fog Free liquid of use. Nava says the formula prevents fogging on visors, goggles, windshields and most clear surfaces without smearing or causing abrasions. To use Fog Free you apply a few drops to the surface you wish to de-fog, then wipe it dry with a soft rag. Nava claims there is no offensive chemical odor. Real enthusiasts might be interested in the helmet-top bottle. To begin a fog-free life check with a motorcycle or accessory dealer.



Easy Reader: For you SR500 fans who want to read and ride Clymer Publications has released a service book aimed straight at you. The book deals with maintenance and repair of Yamaha's SR500, and includes color wiring diagrams and a hop-up section. Check bike shops or bookstores for this manual. If you can't find it, or if you'd like a copy of Clymer's 1980 catalog listing more than 75 motorcycle books, contact Walt Darden, national sales manager, Clymer Publications, P.O. Box 20, Dept. CG, Arleta, California 91331. If you'd rather call the number is (213) 767-7660.

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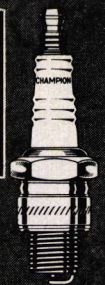

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RIDE AWARE

Why did Bob Larkin buy the KZ440 LTD with its 58*mpg?

Because Bob always believes in going the distance.

When Bob swung a leg over the KZ440 LTD and settled down into the high-step, dual-density cruising seat, he knew he was on a winner. The pullback bars seemed to reach for his hands. And a tap on the electric starter brought the call of the road from dual mega-phone mufflers. Who could resist? Its 443cc overhead cam engine with constant-velocity Mikuni carbs delivered plenty of torque, so he could accelerate quickly and cruise effort-lessly. Bob liked the fact that it was Kawasaki-reliable. And he appreciated the advantages

Kawasaki believes in riding safely. Check local laws before you ride. Member of AMA and MSF. Specifications and parts subject to change without notice. Model availability may be limited.
*Information available upon request.

of a silent cam chain with automatic tensioner. After all, there are better things to do on campus than to spend your free time working on a motorcycle.

When it came to handling, the KZ440 LTD exceeded his expectations. Precision-damped front forks and needle bearing swingarm gave him a real feeling of control and security. So did the drilled front disc brake. The fat rear tire provided lots of traction, and Bob sat down low with the center of gravity right under him. Riding it was a breeze—and sheer pleasure with a close friend on the back seat.

When you stop by your Kawasaki dealer to see the slick looking KZ440 LTD, be sure to see both the chain drive and belt drive models. You might even take a look at the new KZ250 LTD. It's a little smaller, but it's got some big numbers going for it. For openers, how's 80.2* mpg grab you?

KZ250LTD

Kawasaki

Don't let the good times pass you by.

Techspeak

Vintage Gasoline

Separating the wine from the vinegar by octane rating

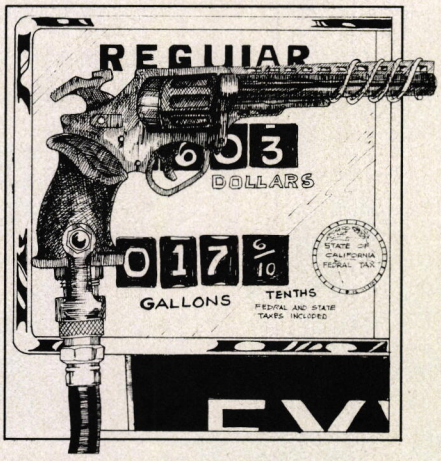
• If you think the only difference between premium and regular gas is three cents a gallon, you could be damaging your engine. For while your wallet may be sensitive only to price, your engine is far more conscious of the quality of what it drinks.

As your engine's behavior will quickly point out, two gasolines with similar prices rarely are similar as fuels. One may work perfectly at all times, but under a heavy load at full throttle, the other may cause your engine to knock loud enough to make your neighbor answer his front door. And allowing this condition to continue can cause piston and valve damage that will have *you* knocking, but this time on the parts department door.

Preventing destructive engine knock usually is a simple matter of using the best available gasoline that's right for your engine. Your selection is made a bit easier by the bike manufacturers themselves, most of whom establish minimum-octane ratings for the fuel to be burned in their bikes. An octane rating simply is a measure of the anti-knock properties of a fuel, and it's displayed on the gas pump right next to the price sticker for each golden gallon. And it is this, and nothing else, that helps you distinguish between the many identical-looking and -smelling fuels that can flow from the end of a nozzle.

Despite a similar appearance, each fuel contains different additives to reduce the knocking, or more accurately detonation, in an engine. Detonation, that audible rattle from the cylinder head, is simply an unwanted secondary combustion of the fuel/air mixture in the cylinder—the ignition of part of the fuel charge without a spark. By introducing various chemicals in the gasoline, oil refineries can regulate how fast and at what temperature the fuel will burn, thereby reducing the problem of secondary combustion.

Detonation actually occurs a fraction of a second after the normal spark ignition of the fuel charge. The flame front generated by the spark plug travels through the fuel/air charge toward the extremities of the cylinder. As this flame moves, the temperature and pressure in the cylinder rise dramatically, and if the fuel has a low enough flash point, the increased heat/pressure will be enough to ignite any unburned fuel before the flame front arrives. This second flame front then radiates out and collides with the spark-ignited flame front. It is the collision between the two that causes the loud



knocking sound. And not only can you hear the collision, it also imparts terrible destructive forces on the motor that can cause piston and valve failure.

It is possible simply to lower an engine's compression ratio to eliminate detonation, but lower compression undercuts the engine's power output. Various other combustion chamber changes can be made, but the burden of reducing detonation lies mainly with the oil companies.

The weapon gasoline refiners use to win this battle is lead. Tetraethyl lead is the most commonly used substance that, along with other chemicals, increases the rate at which the fuel burns and raises its flash point. This strategy gives the fuel less time to ignite before the flame front arrives, and it also raises the flash point above that which can be reached by the pressure increase inside the cylinder alone.

So a fuel with a high octane rating burns faster and at a higher temperature, while giving greater resistance to detonation. But simply using the highest-octane fuel is not the answer to the problems of detonation.

Because all fuels burn at different speeds, engine manufacturers have to optimize ignition timing for a particular octane rating. Honda specifies an 86-octane minimum, for play and street bikes, as does Kawasaki, though its high-compression sports models require a 90-octane minimum. Yamaha also opts for a 90-octane minimum, while Harley-Davidson demands 94 octane for its models. The most flexible requirements come from Suzuki, which specifies anything between 85–95 octane for its four-strokes. Unleaded or leaded gasoline rarely makes a difference to motorcycles, as long as the octane rating is maintained. Some manufacturers do say unleaded will prolong spark plug life, but the octane rating—whether it's achieved by lead or other additives—is the prime arbiter of appropriate gasoline.

The trouble is, even when the right octane-rated fuel is flowing into your engine, that annoying knock may still be drifting into your helmet. You see, even though two fuels have the same octane rating, their anti-knock properties aren't necessarily the same. The octane rating marked on the pump is calculated by adding two different test results and halving the answer. Each of these tests emphasizes different operating conditions. Posting a good score in one and a low score in the other can give the same pump octane rating as a fuel that scores two equal ratings in the different tests.

The two different tests provide the Research Octane Number (RON) and the Motor Octane Number (MON). The RON test emphasizes anti-knock properties at low-speed and light-load, while the MON test highlights the real-world high-speed and high-load conditions found in normal riding. Therefore, a fuel with a higher MON figure will usually have a higher resistance to detonation.

The difference between RON and MON explains why motorcycle manufacturers recommend that if your engine continues to knock when using a fuel rated at the recommended octane, a different brand of the same octane rating should be tried. Using this method, you eventually will find a fuel with a higher MON figure and you won't buy a pricier fuel with a higher octane than you need.

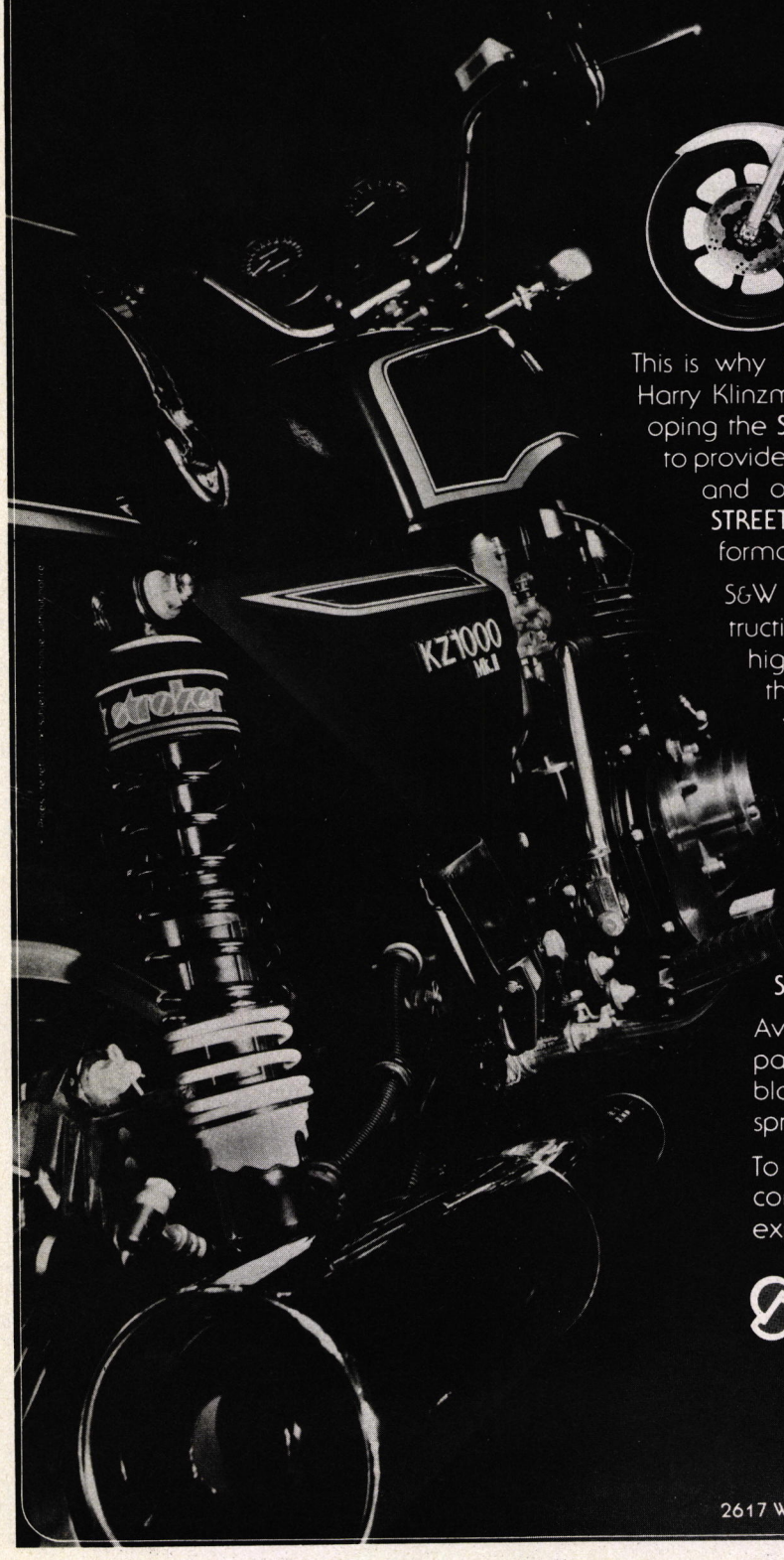
Higher octane ratings are, however, what racing engines require. As compression ratios rise, the chances of detonation increase dramatically. This is why manufacturers recommend only premium gas for racing two-strokes. Prepackaged racing gas provides an even greater step up the octane ladder, but one that may require some changes in ignition timing to get optimum performance.

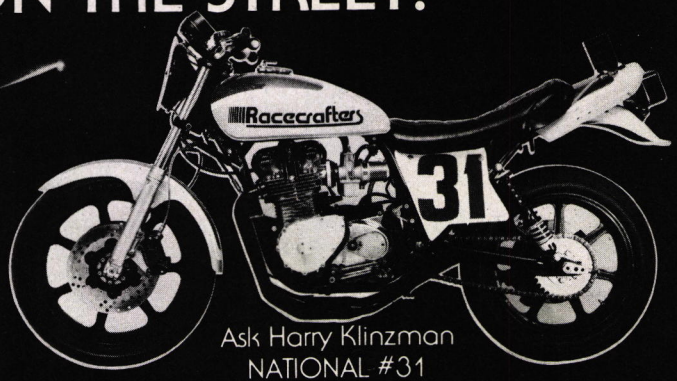
Whatever you pour into your gas tank make sure it at least meets the minimum requirements laid down by your bike's manufacturer. For optimum performance, take the time to find a gasoline that suits the demands of your engine and riding style. Gasolines may all look and smell the same, but every one is different. And when you finally find the right one for your motor, your neighbor may stop coming to the door to watch you ride off down the street.

—David Dewhurst

Professionals Know,

WHAT'S GOOD ON THE TRACK IS GREAT ON THE STREET!





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Letters

Twists on turns,
Moto-guilt trips,
The stuff of legends

PERSONAL EFFECTS

I just thought that you might like to know some of the effects your totally unbiased comparison of two Super Sport bikes (Honda/Ducati October '79) has had on bike sales in this area.

THE BEST HANDLING SUPERBIKE IN THE WHOLE WORLD, the CB750F, unfortunately is in short supply in these parts. One dealer only had an even dozen (two were '79 models) in the showroom. Do these guys think we can wait forever?

On the other hand, the local Ducati dealer has taken unfair advantage of the situation. Of the two 900SS Desmos he had, one was sold sight unseen in the crate. The other one—now get this—moldered on the showroom floor for a full month before some sap made an offer.

Fortunately, I read your article in time. But I guess some people just don't pay attention, huh?

Dave Hampton
Lakewood, Colorado

Sure looks that way—ed.

FLAT WRONG

When I read through your listing of all the different test bikes I noticed that for the quarter-mile figures for the CBX you used the best time turned in at the Bonneville Salt Flats, but all the other bikes were not timed under the ideal conditions there. 12.16/111.11 was the best time turned in by another magazine, while your time at the Flats was 11.86/114.5. If one bike is tested and timed at the Salt Flats, all of them should be tested there; they would all turn in better times under the ideal conditions.

I can see why you went there, though. Other bikes that don't have six cylinders are faster—mine is one of them. And of course it looks better on paper anyway. I don't need a big six-cylinder hyperbike to run in the 11-second bracket. Four will do the trick better and give better gas mileage, too.

Glen Turnbull
Flint, Michigan

You're a little confused. The CBX's quarter-mile times were taken at the same dragstrip the other bikes were tested on. And unless your four is a GS1100, it's slower than a CBX—ed.

SINGLEMINDEDNESS

I just read about the Norton Rotary and the CCM street single in the April Rumors section. I hope you will test both of them as soon as they become available. I really want to know if the CCM will be in the manner of a Gold Star or that of the 441 Victor ilk.

About two years ago I read a story about an English mailman who acquired a CCM 500cc engine and dropped it into a BSA 250 frame. While his design was conservative and looked similar to a small Honda, the sight of that updated BSA B-50 single slung into that frame looked awfully nice.

I might not have $3500-plus to drop on a street single right now, or on any other bike for that matter, but I can still dream while polishing my Trumpet and taping up the wiring.

Please get your hands on both bikes when you can.

John Donlon
LaGrange Park, Illinois

THE CLOCK STRIKES SIX

How many months will it be before your writers/testers turn away in scorn from the GS1100 because suddenly it's not the most overdone motorcycle skimming the highways?

What a turnabout on the CBX. So now it's the biggest dog available, huh? I'll still bet that more people buy the CBX, if only because it qualifies as a flashbike, whereas the GS1100 looks like every other four-cylinder made in Japan!

Don't misjudge your public; they don't all scorch the tires or pegs off of their mounts. That's why these Japanese pseudo-choppers are taking the country by storm (agreed, it's unfortunate).

I would love to purchase the next hyperbike that is *in*, but I'm afraid that after you guys rave about it, your fickle eyes will spy something better. And then all I'll have is a dog and a payment book.

R. Aehle
Albany, Georgia

Thanks for the vote of omnipotence, but your bike will still be as good as it was. Only the competition will have changed—ed.

PAYING OFF THE DEBT

In his article on fairings in the April issue, Technical Editor David Dewhurst seems to imply that if the price of gasoline goes up, it will take longer for a fairing to pay for itself in fuel savings than it would if gas prices held steady. A few minutes with a pocket calculator should be sufficient to prove that the opposite is true. All other relevant variables being equal, as the price of gas goes up, the time it takes for an effective gas-saving device to pay for itself grows shorter.

Tom Dial
Annandale, Virginia

Of course. It must simply have been the fumes from all the gas we'd saved—ed.

WHAT LEGENDS ARE MADE OF

Reading Paul Dean's arrogant viewpoint comparing the GS1100 to the CBX shocked, appalled and provoked me to write. The comparison as written only served as an irritating

attack on a fine machine. To him and all others who choose to define the role of the CBX and its rider by comparison to other machines, go pack fiberglass up your tailpipe! The CBX is still as impressive, unique and desirable as it was on the day it was introduced. Long live the Honda Six!

Thomas K. Eick
New Baltimore, Michigan

AND WHAT THEY TURN INTO

It has only been recently that I have started looking into magazines that feature Japanese-produced motorcycles. I have always ridden a Harley-Davidson. I commend the Japs for producing a bike that is reliable and can be had for a good price.

It seems that we Harley riders have often been accused of having an identity problem and of wanting to look macho. Yet all I ever read in your type of magazine is how fast the riceburners can do a quarter-mile.

I know of at least one riceburner jockey who has or had an identity problem because he took up half of my lane on the expressway and kept goosing his Honda 750. I guess he had something to prove to me. If I had the chance, I think I would have given him a spanking.

In the 80-year history of Harley-Davidson, the company has never tried to build a stock pavement-burning beast. When Harley does build one I'm sure that the riceburners will have to move over.

Also, I have yet to see two Japanese-produced bikes that don't look alike, and I have yet to see a Jap bike that will attract as much attention as my Low Rider. Go ahead and burn up the quarter-mile, just leave me alone.

C. Hall
Newport, Kentucky

If all you read in this magazine are quarter-mile times, you already are alone—ed.

THE VERDICT IS GUILTY

The subject is gasoline mileage . . . an area in which we motorcyclists don't look as good as we sometimes lead others to believe.

My CX500 delivers 53–60 mpg, which isn't so bad. But with a handful of imported cars nipping at the 50-mpg mark, the CX figure doesn't look all that good. And the 33–44 mpg you listed for the Honda GL-1100 Interstate in the March issue stands as a solid reminder that motorcycle engines aren't nearly as efficient as they should be.

The fact is that motorcycles are much more fun than the four-wheel tin coffins and we love them. But from the practical standpoint, there's no way that you can squeeze five passengers on a bike for a 100-mile trip, and the gas consumption leaves a lot to be desired.

Danny McNeill
Clemson, South Carolina

You've got a point. And that's a nice hair shirt you've got there, too—ed. •

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GUIDE LINES

Cycle Guide's Monthly Chronicle of Scoops, Tips, Rumors and Hard Facts

BY LARRY WORKS

COMING SOON

• While most of the **major** manufacturers are off **testing** and experimenting for the **1981** model year, it doesn't mean that nothing new is around. Take, for example, the **Dunstall** Suzuki **GS1000R.** The R traces its origins to the RG500 and F/1 competition, and continues in high-performance style with an engine in full **race tune.** Aside from the obvious bodywork, the R proves its racy point with a **10.8:1 compression** ratio, high-lift cams, oversize inlet valves and a **close-ratio** gearbox. The exhaust is pure Dunstall, while the wheels are **Campagnolo,** the brakes Lockheed and the rubber Goodyear.

The list of hardware is fairly complete, and as you'd expect, it's not just for show. The R puts out a claimed **110 horsepower** at the rear wheel, which is sufficient for a trip of the quarter-mile clocks at 10.8 seconds and a top speed of **165 mph.** Topping off the list of high-performance specifications, the R slips out the door of the Dunstall factory and onto the street for around **$10,000.**

• Keeping with the same theme of highlighting the less publicized marques, consider the **OSSA** Desert 350. Maybe you remember the 250 **Desert;** it's been around for a while. But the **350** is new for 1980. The **new** Desert actually displaces 302cc, and runs a 32mm **Bing** carburetor, Motoplat ignition and carries more than 2.5 gallons of fuel. When the 350's engine is wide open in fifth, the **209-pound** OSSA should be running at about **75 mph.**

• But motorcycles aren't the only things that are coming soon. Picture this: You roll up to the gas pump, the attendant strolls over and poses the question, "Regular or **gumweed**?" Sound **unusual?** Surely. Impossible? Not hardly. In these petroleum-starved days, **new fuel** sources seem to turn up weekly. According to a Reno, Nevada source, desert gumweed could produce **five million barrels** of **high-grade**, sulphur-free **oil** daily—at a cost of about **$20** per barrel.

• If new fuels don't interest you, perhaps **electrickery** does. The January issue posed some interesting questions on the future of electronics in motorcycling, but it begins to look as if the **surface** has just been **grazed.** One spokesman from a national electronics firm says that a gadget that could find its way on board in the near future will produce a **husky woman's voice** to tell you that something's askew. The device will have a limited vocabulary—say, about 50 words—and will warn you when your bike is **overheating,** low on oil or the like. The thinking is that warning lights can be **distracting,** while a calm, sure voice will convey the message more clearly.

• But whether you can see yourself having a conversation with some **future** motorcycle, chances are good that that motorcycle will be **black.** According to one widely circulated report, black and **dark blue** will be the most **popular** vehicle **colors** in the future, largely because of good coordination with other **detail** colors and a variety of **graphics.**

• Now, while you're still looking **ahead,** start contemplating **recalls.** They don't just happen to cars and toasters, you know. In fact, they happen to motorcycles. A defect report that

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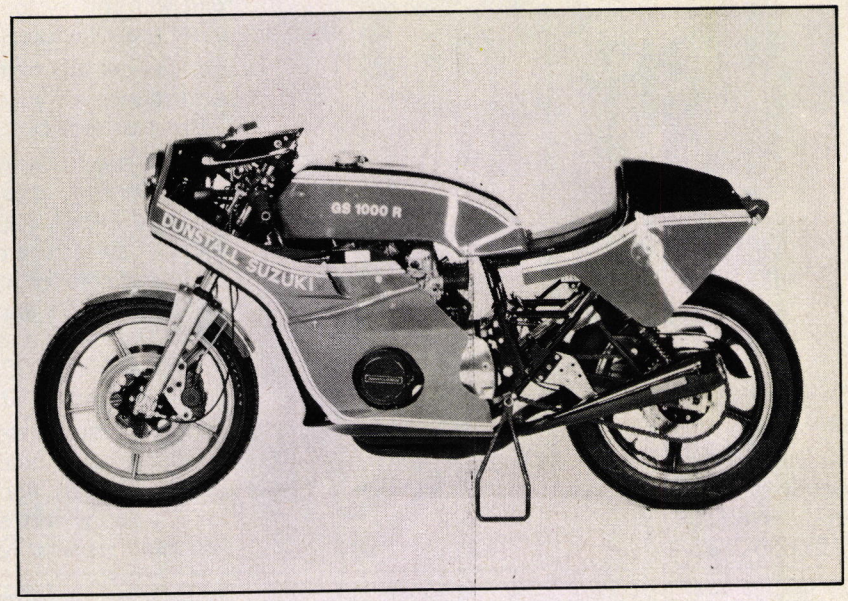
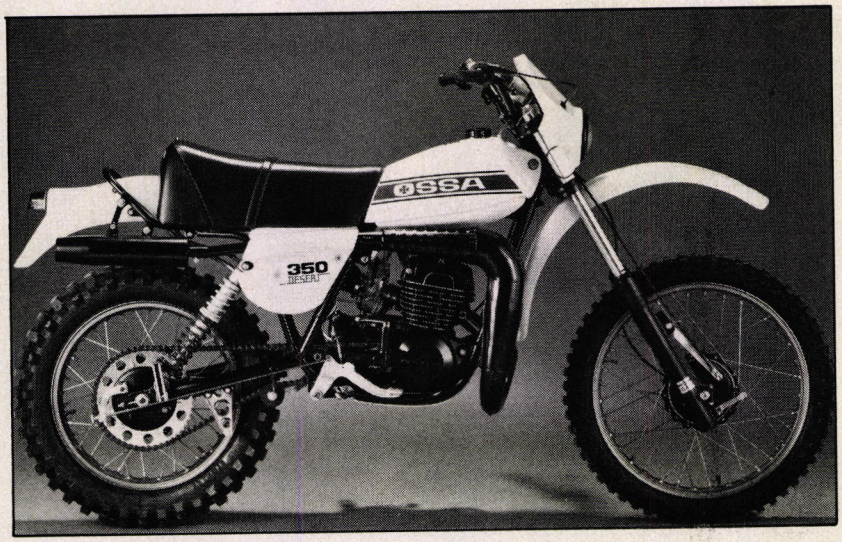


Roadburner's delight Dunstall Suzuki GS1000R

Reading like a 165-mph billboard for speed.



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Suzuki submitted to NHTSA shows that there's a problem in the 1980 G- and L-series **GS850s** that could cause the **carb** to hang up when returning to idle. A dealer fix is reportedly already available.

• Also, **Suzuki** has put out the call on more than 9500 1979-80 850s to check for possible improper **torquing** during **assembly** that could result in **rear-wheel lockups.**

• But **recalls** don't just happen to Suzuki. **Harley-Davidson** has just recalled more than 57,000 1975-79 bikes to correct a fender-attachment problem that could **seize** the **front wheel.**

• Lest you think that recalls in the motorcycle industry only happen to bikes, here's proof that sometimes **accessories** have to make the long trip back. In this case, a few **Vetter** accessories should be returned to Vetter dealers for a **checkup.** If you've got a Vetter **fairing** that was shipped between June–August 1979 or a **luggage rack** that was shipped in a saddlebag set between November 1978–May 1979, find your way to a Vetter **dealer.**The dealers have been alerted and have the **appropriate fix** in hand.

• At the risk of popping your bubble, if you've been holding out hope that the **DSTT 250cc** water-cooled two-stroke **Cagiva** will make it to the U.S., it's time to give up—for now. Slater Bros, the new U.S. Cagiva distributor, didn't list the **hot waterbike** with the Cagivas slated for 1980 importation.

• Last month you read about Bell's new **Magnum** III. This month you get to see it. And to refresh your memory, the Magnum **III** runs a five-snap visor and a two-year warranty. It's the **lightest Snell**-approved helmet **Bell** has ever made.

• **Feeling** a little **hostel?** Maybe you should. It's a cheap way to **sleep around,** should you decide that a trip is what you need. And to help plan the trip, American Youth Hostels publishes "1980 **Highroad** to Adventure." The booklet describes hosteling, and you can get it through AYH Travel Department, Delaplane, Virginia 22025.

• And as long as you're contemplating **vacation rides,** picture one in the **Australian bush.** To flesh out the picture, contact Bushman Motorcycle Tours of Australia, North Adelaide, South Australia 5006.

• **Twin block** might sound like something more appropriate to football season, but it's got

more to do with **busting berms** than with breaking away for a long one. It refers to Dunlop's new **K290 MX** tire with a twin block **tread** pattern. Designers claim the shoulder tread blocks will result in more **biting edges** hitting the track at one time, for more control of sideslip and better cornering on hard ground.

FEDERAL CASES

• If there's any truth to the notion that California leads the nation, things could turn a bit **bleak** for motorcyclists. By the time you read this, the comment period on the Bureau of Land Management's California **Desert Plan** will be closed. The plan, which cost **$8 million** to prepare, outlines four options for the future management of California's desert areas. **AMA** reports show that the course of action most likely to emerge from the **BLM** study will **cut** available "open" desert riding area in half. One of the plan's four options will go into effect by the end of September, following a Congressional review.

• In another off-road item, the California Air Resources Board (CARB) is still at it. And the "it" that **CARB** is at could end up with **49-state dirt bikes.** The board is studying off-road motorcycle exhaust **emissions** to consider standards that could go into effect as early as **1984.**

• At least as far as rider **education** is concerned, things are on an **upswing.** California rider programs got a shot in the arm with the recent opening of an in-state **Motorcycle Safety Program** office. The office will help with training instructors, **planning** training programs and in securing loaner motorcycles for California groups that want to **sponsor** rider programs.

• And the education move is working in other states, too. **Illinois** is continuing with last year's program of **rider** education throughout the state. More than 50 sections of the 20-hour classes will be held around Illinois for in-state residents 15 years or older. And while **education** is all well and good, the kicker to the Illinois program is a bit more substantial. Students who complete the course can get a **10-percent discount** on their motorcycle **insurance.**

• Remember SB1302? Well, if you lived in **Idaho** you would. The bill would have enacted **helmet** legislation there. But **SB1302** was recently **defeated,** so now you can forget it.

• But one thing you can't forget is the **EPA noise** control program. And just as a reminder that the program is **still around,** a recent House vote approved reauthorization of the program through September 1981.

• And just to finish on a positive note, there *are* a few indicators that **California** is beginning to recognize the **value** of two wheels, after all. To show that the state is **"thinking motorcycle,"** energy reminders touting the **conservation** value of motorcycles will be flashed along certain sections of California freeway when the signs are not being used for traffic advisories.

"Thinking motorcycle" in California

Hit 'em in the pocketbook.

HARD CASH

• Whether you quote Hong Kong prices or not, these days **gold** looks to be a solid investment. So much so that Dunlop's new Gold Cup Series could amount to a big **payoff** for **motocross** racers who run on Dunlops in 1980. The series will figure Stadiumcross, AMA MX Nationals, USGP International and Trans-USA results to pick a winner. And Dunlop will award that racer **five ounces** of **pure** gold **coins** for his efforts.

• In other contingency news, the top 10 **Esprit**-shod riders in the AMA Nationals, Trans-USA and Supercross series will be eligible to dip into Esprit's **$16,000** contingency **pot.**

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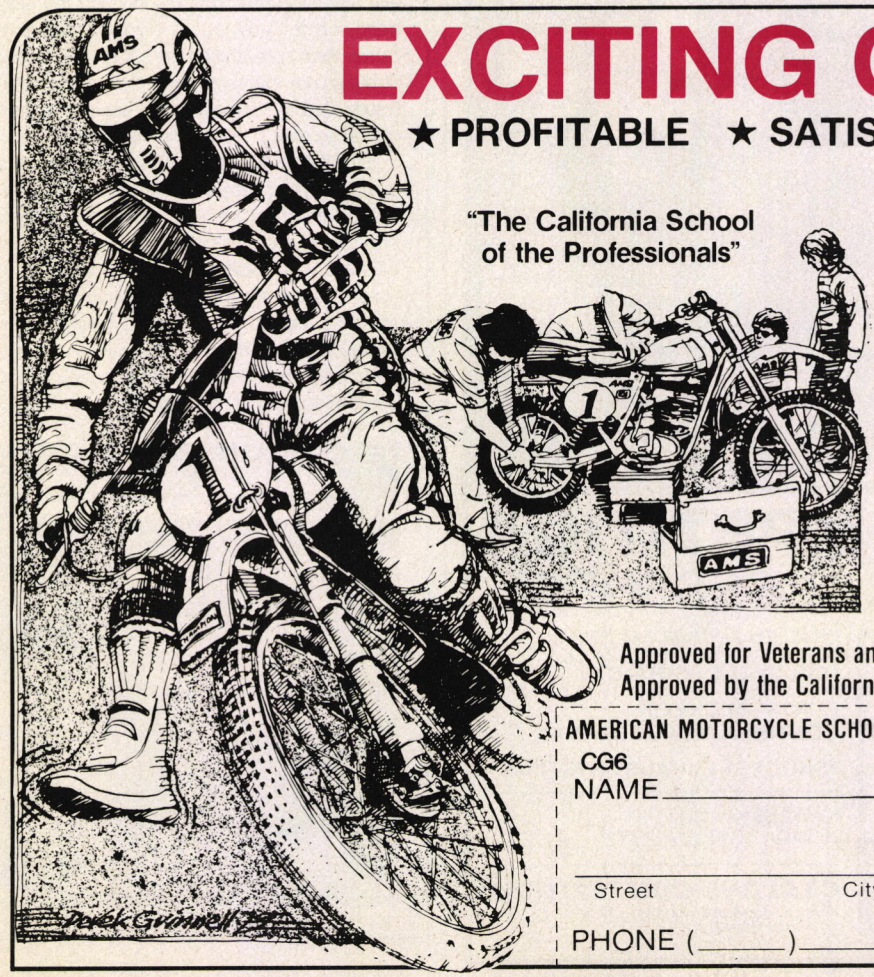

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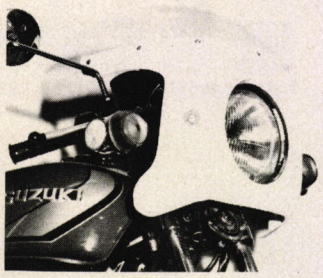

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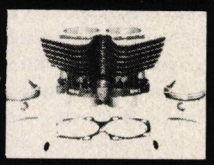

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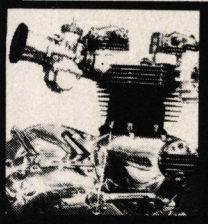

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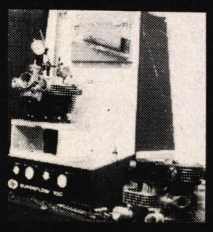

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Aftermarket Explosion

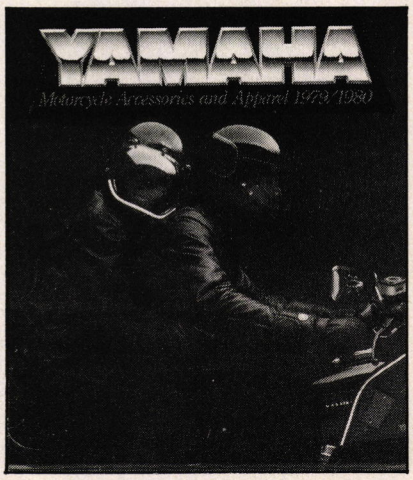
Who lit the fuse of the cherried bomb?

• If this spring's fever breaks into a calliope of cherried-up motorcycles, there's not only a logic to it, there's also a slew of new conditions that practically guarantee the same thing for years to come.

A growing number of riders are changing their thinking when it comes time to trade in Old Faithful. More and more riders have opted to bypass new motorcycles in favor of revamping their old bikes. According to representatives of the Big Five, that's not so surprising.

Spokesmen for Hondaline attribute this trend—reflected in a growth in the aftermarket—to the American economic market in general, the inflated price of new bikes, and, of course, to the rising cost of fuel. They suggest that many would-be buyers will reel from the new-bike showrooms back to their garages, muttering about the virtues of the Classic Motorbike. The industry prediction is that current riders will hang onto their present bikes longer than they used to, while a rising number of new motorcyclists will enter the motomarket through the side door, on a "previously owned" machine rather than something that's first-time shiny. Greater numbers of former or occasional riders also are expected to rejuvenate their old bikes with a new fairing or saddlebags.

Street riders traditionally have accounted for the largest slice of the accessory dollar, and aftermarket analysts say that this won't change. But street bikes are just one facet of the aftermarket explosion, according to most market bigwigs, who hasten to add that the market in general is beginning to "mature," to find depth in every market segment. The development of a flourishing used-bike market, they contend, is indica-



tive of that maturation, and duplicates changes that took place in the automotive industry years ago.

There are, of course, certain groups within both motor industries that have been practicing what the American marketplace is just now discovering. The driver of the vintage Corvette, for instance, who had spent many hours and dollars on his "old car," or the faithful, crinkle-eyed veteran of one of Mr. Davidson's older Harleys were both once anomalies. Today they're just a part of the consumer mainstream.

That change in the course of the mainstream is in part responsible for some remarkable industry growth. For example, Harley-Davidson, Honda and Yamaha all recorded significant increases in their aftermarket divisions last year, while Suzuki and Kawasaki showed steady and gradual growth. Harley even had to split its aftermarket division into two groups simply to handle the load. All this growth is no doubt healthy for the Big Five, but the success of those accessory groups is only one part of the story. There are nearly 1500 companies that supply parts and accessories to the motorcycle world, and the competition can be fierce. The trend emerging is that those firms with gross sales lower than $50,000 per year tend to fold. It is the big, bikes-only

businesses that reap the benefits and score the bucks.

Some analysts see the current changes in the motorcycle market simply as the natural result of the boom-and-bust cycle that's been established as the norm for the industry. While that may be so, even the more conservative readers of motorcycling's tea leaves say that after-products have gained a new foothold in the market. The Yamaha spokesman sums it up. It's the Y.P.D.I. contention that manufacturers and dealers have become more sophisticated, providing better-quality products for a more discriminating buyer. That sort of thinking turns "cherry" into a verb and makes distributors look to the future with gold-plated lenses.

—Merry MacTavish

Continued

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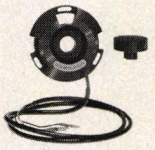

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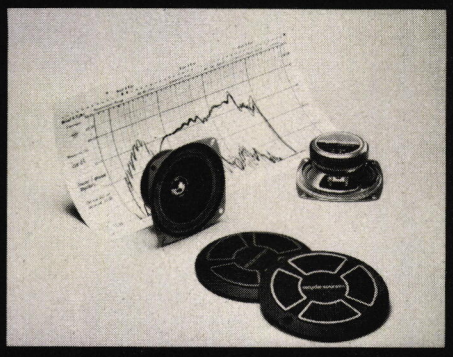

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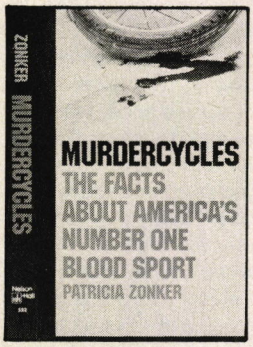


MURDERCYCLES
THE FACTS ABOUT AMERICA'S NUMBER ONE BLOOD SPORT
By Patricia Zonker
204 pages, $9.95
Nelson-Hall, Inc.
325 West Jackson Boulevard
Chicago, Illinois 60606

• Read this book. Read it from cover to cover, then read it again. And when you're through, pass it on to another motorcyclist. Study it. This Is The Enemy.

The author, one Patricia Zonker, is a qualified expert on motorcycles by virtue of her articles in *"Good Housekeeping, 'Teen Magazine* and *The Rotarian."* Her approach to reportage on "the two-wheel disease" would make other rabid conspiratorians pale in comparison.

Her quest is simple: to plant a stake in the heart of "the motorcycle menace." The diatribe begins with a list of "heroes" who fell victim to motorcycling, who became "motorcycle addicts." Unfortunate readers are spared none of her pointless histrionics as the list works its way back from the Allman Brothers, past Roy Rogers and finally to Lawrence of Arabia.

Through the author's twisted viewpoint, we are then enlightened on the pervasive "Japanese Revenge" that is motorcycling. How comic books, cereal boxes, bubblegum cards and such subversive institutions as the public library and *Boy's Life* are manipulated in a concerted media blitz to sow the seeds of acceptance for "the glittering death machine" in the fertile and defenseless minds of youth. As proof, Zonker juxtaposes grisly scenes of highway mayhem with advertisements of childrens' cycle toys, showing how attractive is the sweet, how destructive the decay. In the perverted peekaboo technique that Zonker uses, minibikes are depicted as inspiring hangings, while legitimate motorcycle instruction becomes simply "classes in blood and gore."

It is all too easy to assume that anyone would see Zonker's warped vision, skewed figures and inflamatory nonsense for what they are. Don't. There is no way short of libel to describe how sick this book really is.

—Larry Works

• So much for the dirt types. For **drag-racers, R.C.** Engineering's $40,000 NMRA contingency ante isn't that company's only incentive program. R.C. has also established a **$10,000** Sportman's Cup Series. First place in the series goes to the top-scoring **sportsman** in five of the six NMRA Nationals, who will pick up an extra $3000. The rest of series **money** is paid down through 10th place.

• A **pinch** here, a pinch there; all that contingency money begins to **add up.** In fact, **NMRA** recently announced that cash and contingency awards for the organization's first full season totaled more than **$250,000.**

• But enough talk of the money flowing in. For the money that's leaving, there's Toyota's Supercross **point fund** to consider. Last year the fund amounted to $100,000, but the fund is no more. **Toyota pulled** its money and went to support the pro rodeo circuit instead.

• Just so you won't think that all the money talk goes to racing and contingency wheeling and dealing, here's an item to warm up your cockles. More than **$25,000** was collected during Daytona for the **Muscular Dystrophy Association.** Most of the money was gathered by way of a **Harley-Davidson** raffle of a new Sportster and through contributions made by Harley and Harley employes.

• Never one to be left out, **Kawasaki** also has laid some NMRA contingency plans. A recent announcement told of a Kawasaki **$30,000** pay-as-you-win program for the 1980 season.

RUMORS

• This month the rumors are flying hot and heavy. To get some of the more conventional talk out of the way, there's repeated word of a new and **larger GS** that you read about in this column some time ago. Sources insist that bike in question—a **vee-four shaftie** tourer—has gotten to the **prototype** stage and is being **tested** in Japan as you read this.

• In another item about Suzuki, sources overseas allege that **four-valve**-per-cylinder technology **is on deck for** all **1981** GS-series **machinery.**

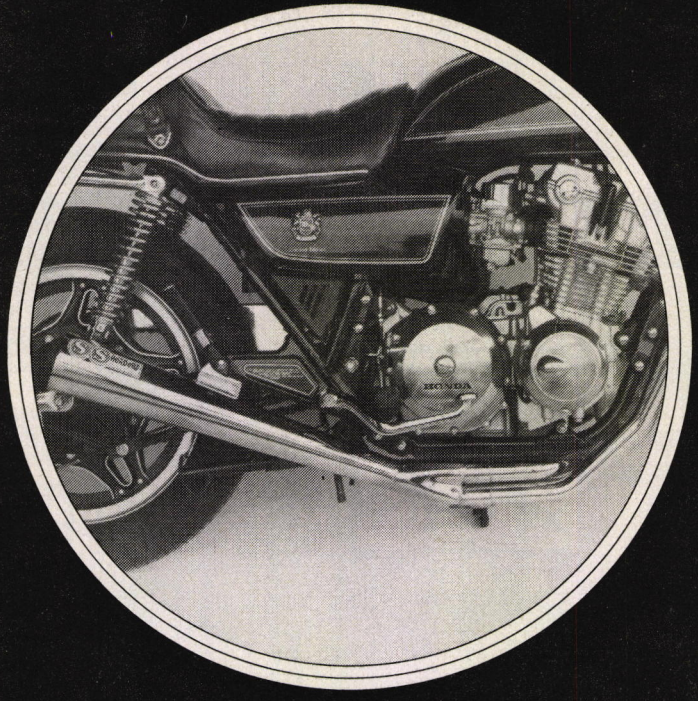
• And rounding out that last bit of gossamer, the same insiders also claim that in addition to having 16 valves, the **GS550** will be bumped **up to 650cc** to compete with the 650s from Honda, Kawasaki and Yamaha.

• In one last item about Japanese technology, here's a bit of a speculative update on the **monoshock Honda** street bike you read about last month. The latest **scrap** of news is that it will be the test bed for some serious **techno** trickle-down from the as-yet star-crossed **NR500.**

• But lest you of the oval persuasion think you've been left out in a **hail** of street rumors, keep you eyes open for a new **shorttrack** offering from **Cagiva.** Hard news about the Italian entry should be surfacing soon.

• And in the line of a Swedish entry, a few months back you read about a **prototype four-stroke** off-road Husky. Well, the talk is still percolating—always a hopeful sign—and has begun to coalesce. The word now is that

Continued



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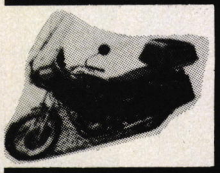

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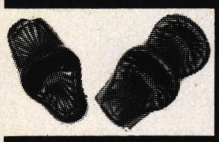

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RIDE/REPORT:

Yangtze River 750

An hour later you'll want to ride it again.

• "Tell us, Chairman, how did you ever manage to duplicate a 1932 BMW for the Yangtze River 750?"

"The same way the Russians got the Cossack!"

For those fascinated with motorcycle history, during World War II there was a minor brouhaha near Leningrad. Something to do with the Germans trying to take over the Motherland. Well, the locals didn't take kindly to the intrusion, and in the course of the fighting took over a whole bunch of German hardware. One of the prime acquisitions was a 1932 BMW four-stroke four-speed touring bike that the Russians faithfully duplicated right down to the wire spokes. The Cossack.

Anyway, not too long afterward, times being what they were, there was this brush

Husqvarna has a no-compromise, high-performance four-stroker in the wings, waiting for the market to be right for its equally **no-compromise pricetag.**

• And while your **juices** are flowing toward a four-stroke **Husky,** consider this attendant bit of could-be: Also just waiting is said to be a **street bike** built around the same engine.

• On the subject of **Husky** engines, a slow leak is reporting that all the **1981** Husqvarnas will have **new**-from-the-dirt-up **power.**

• Further talk confirms that one of those engines will be a **420—**for a new **automatic** that Husky is reportedly testing now. The rumor is that the shiftless Swede will see a **1981** introduction, and that the automatic transmission is considerably **redesigned** from the original Husky automatic. More gossip has the 420 engine seeing other equally interesting applications in the near **future.**

• In what could be the latest moto-fashion news, talk from motorcycling's **garment district** is that the centerpiece of **Bell's new** helmet line—expected early in **1981**—will be a full-coverage design with a more pronounced chin guard than the **Star** II's.

• In another possibly related helmet tidbit, the **Snell** Foundation is said to be considering a **new requirement** for 1981 approval—one that concerns crash impact at the **jaw.**

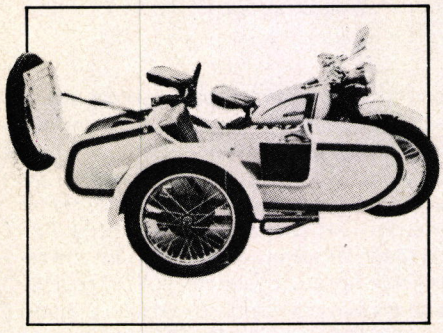
• Remember the **Quasar?** Well, it may soon have some **competition** in terms of weather protection. A U.S. firm is said to be working on a **total-enclosure** fairing for street bikes.

• Jumping across The Pond for a bit, **bizarre** tales about **Sanglas** have the Spanish firm

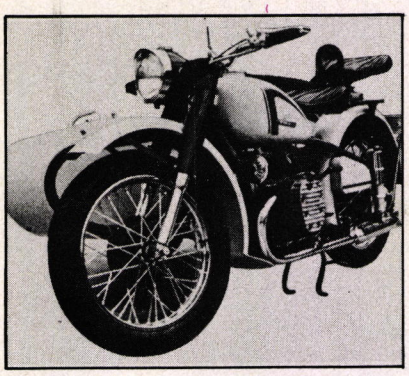
Continued

in Asia Minor. Something between the Russians and the Chinese over Mongolia. And because of it, comrade, today *you* can buy more or less that same 1932 BMW the Germans lost in Belorussia for just a tad more than the 1932 price. The Yangtze River 750 is available in Hong Kong, Africa, Great Britain, and West Germany for only $1960 Yankee dollars (less duty, freight, taxes). And for only $740 more, Portric Company Ltd. will throw in a sidecar and tool kit.

How can you go wrong with such a deal?



Over in Hong Kong, a Yamaha 850 runs more than $3400; the Yangtze River is a little over half the price. And with this baby having a *wading depth* of 18 inches—just what you need to conquer the Marshlands in Xinjians—what more convincing could you need?



Yangtze River 750

Importer: Portric Company, Ltd.
Room 611 New World Centre, 18-24,
Salisbury Road
Tsimshatsui,
Kowloon, Hong Kong

Category	street
Suggested retail price	$2700 (as shown)
Engine type	four-stroke horizontally opposed twin
Valve arrangement	pushrod-operated valves
Displacement	746cc
Gearbox	four-speed
Wading depth	18 in. (457.2mm)
Weight	480 lbs. (217.7kg)
Top speed (claimed)	75 mph (120.7 kph)
Fuel tank	steel, 5 gal. (18.9 *l*)
Fuel consumption (claimed)	70 mpg (29.7 km/*l*)

This particular relic of war has been in production since the 1950s, being used in Red China by the military. The bikes are built in Nan Chang, 400 miles northeast of Hong Kong; monthly output is 150 units. As you can imagine, the specs on this 750 are somewhat unusual. The engine has a maximum output of 22 horsepower with a top speed of 75 mph. The weight is a hefty 480 pounds, stopped by drum brakes. Cruising range is 350 miles from the five-gallon tank.

Exportation to Hong Kong of the Yangtze began last Fall. Owing to the attraction of the price and the prestige of owning a 1932 BMW replica, the importer, while at the Macau Grand Prix, sold something like 12 in two days, in cash. Peter McGill, sales manager for Portric (the importer) is encouraged, "We're selling 10 a month now, and the big ad push is yet to come."

After all, where else can you buy a brand-new vintage bike, with a sidecar and a flashy factory-applied paint job in the bargain? Shoot, everyone would be complimenting you and admiring your perfectly restored antique. And who would ever tell . . . China is 7,000 miles away.

—Steven N. Mayer

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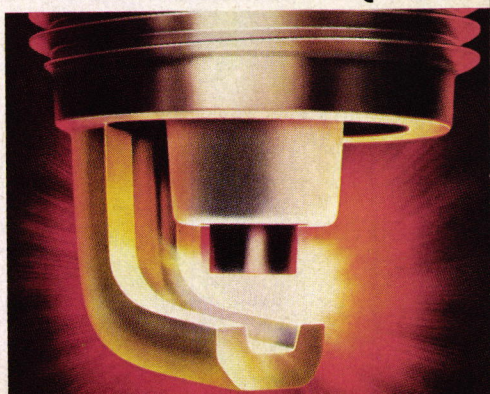

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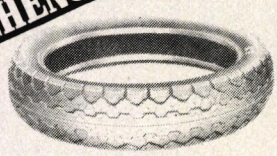

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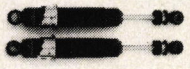

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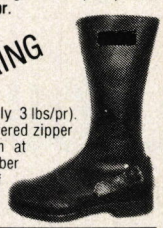

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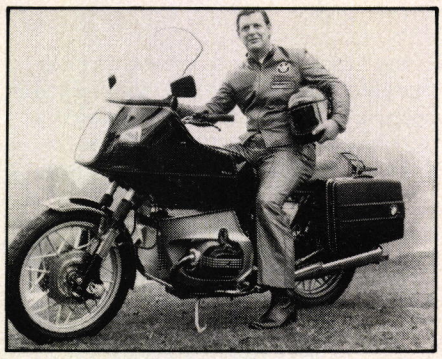
GUIDE LINES *Continued*



O'Gaffney to circle the globe—again
With Pole-vaulting BMW R100RT.

working on a **monster** single-cylinder street bike. Discounting the talk of musty **Moorish castles,** the conversation settles on a five-speed DOHC **750cc thumper**—one with electric starting. The four-valver—the intake valves are said to span nearly two inches—is said to run a **twin-throat** carburetor and to carry a compression ratio of 9:1. Further hints about the bike indicate that it will see U.S. introduction in 1982, and that it produces 60 horsepower at 9000 rpm.

• And a final note to those of you following the **Triumph**/Meriden financial **soap opera,** the latest news—as yet unconfirmed—is that **Suzuki** and a Japanese trading company will come to the **aid** of the **foundering** Meriden Co-op.

APART FROM THE CROWD

• File this one under nice work if you can get it. Ernest O'Gaffney, who last year rode **around the world** in 79 days, is off yet again. For a bit of a twist, this trip will be the first of its kind and will cover both the **North** and **South Poles.** An outrigger of sorts will enable the California adventurer to ride his BMW **R100RT** through the **snow,** while a trailer pulled behind the bike will carry extra fuel, a portable generator, spare parts and food. **O'Gaffney** figures that this outing, which includes airlifting gear and rider over water at several points, should take about six months.

• If you are reading this column, there's a good chance that your body carries a lower-than-average level of the **enzyme** monomine oxidase (MAO). But don't lose any sleep over it.

According to a University of Delaware psychologist, **thrill-seekers**—that's right, you probably qualify—tend toward lower levels of MAO than hammock-swingers and other **sedate** types. The **enzyme** controls the cells that carry information from the nerve cells to the brain, so being low on MAO means that you are high on the **stimulating** chemicals it normally regulates.

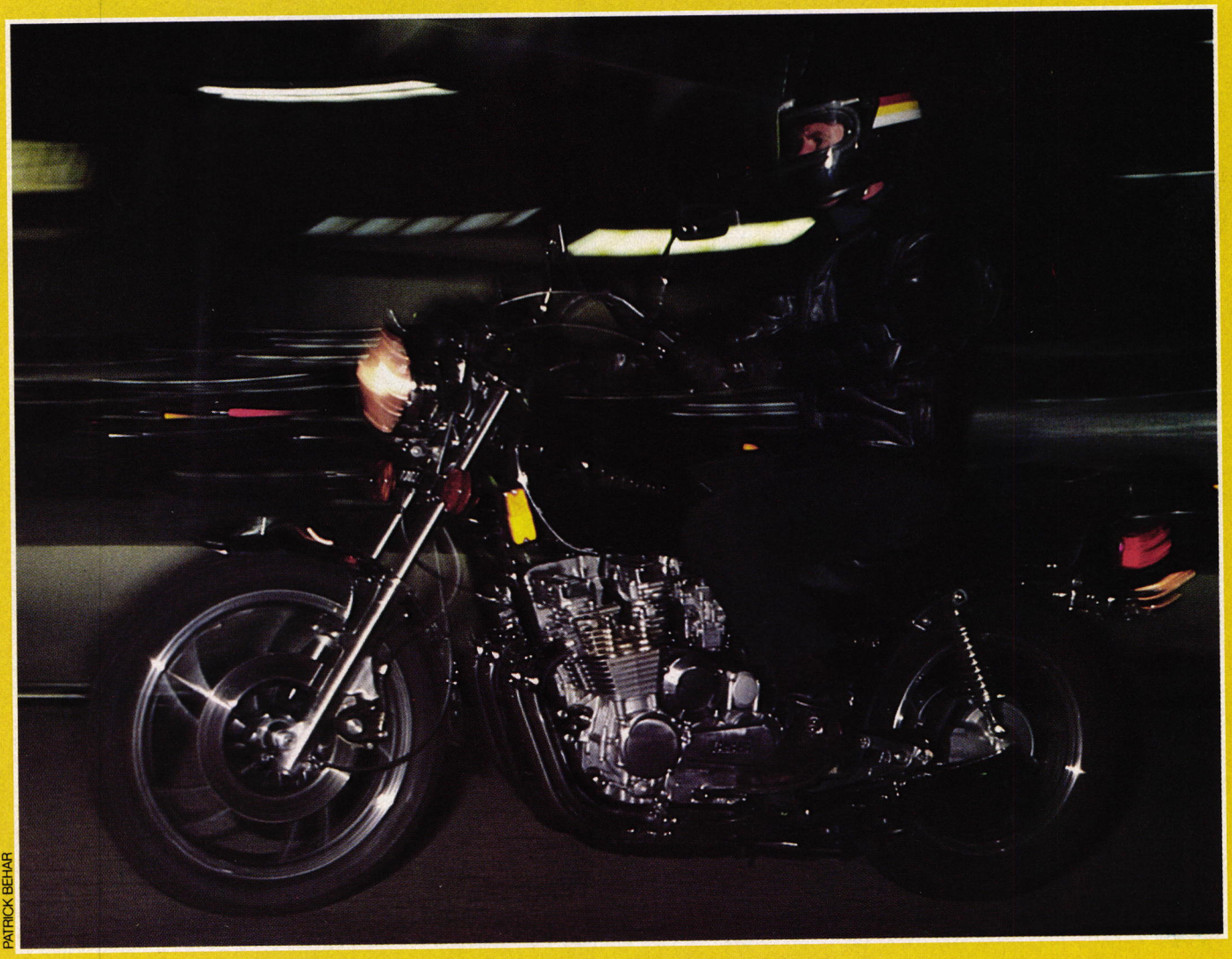
What this all means in a nutshell is that the **good feeling** you get from a fast pass through the mountains really can make you feel more "alive." There you have it—a scientific reason to go out for a good ride. Enjoy it. ●

ROAD TEST:

Yamaha XJ650G Maxim I

Think of it as motorcycling's Saturday Night Special: Sounds like a 1000, feels like a 550 and packs the firepower of a very potent 750.

BY PAUL DEAN



PATRICK BEHAR

Just in case you hadn't noticed, specials really aren't very special anymore. Not just Yamaha Specials, but *all* factory-built customs, which a lot of riders simply call, well, *specials*—without the capital "S," of course. And what makes specials so unspecial these days is that with rare exception, they're more commonplace than their standard counterparts, often outselling them by as much as five to one.

What's more, in a growing number of instances there isn't even a bona fide standard-issue version for a special to outsell. With some models, the standards look so much like the specials that you need a program to tell them apart. With others, there aren't any un-custom incarnations whatsoever to be had. And in that respect alone, Yamaha's brand-new Maxim I may be the most special Special of all. For not only do Americans get this 650 Yammie dressed exclusively in factory-custom livery, it was intended to be that way from Day One. It is, in fact, the first Yamaha ever conceived, designed and built specifically for the unique requirements of the low-riding American street-bike market. There is a sport-minded version available in Europe, but it was spun off from the Special, not the other way around.

As Specials go, however, this one actually *is* pretty special. To be sure, it doesn't break any new engineering ground or reek

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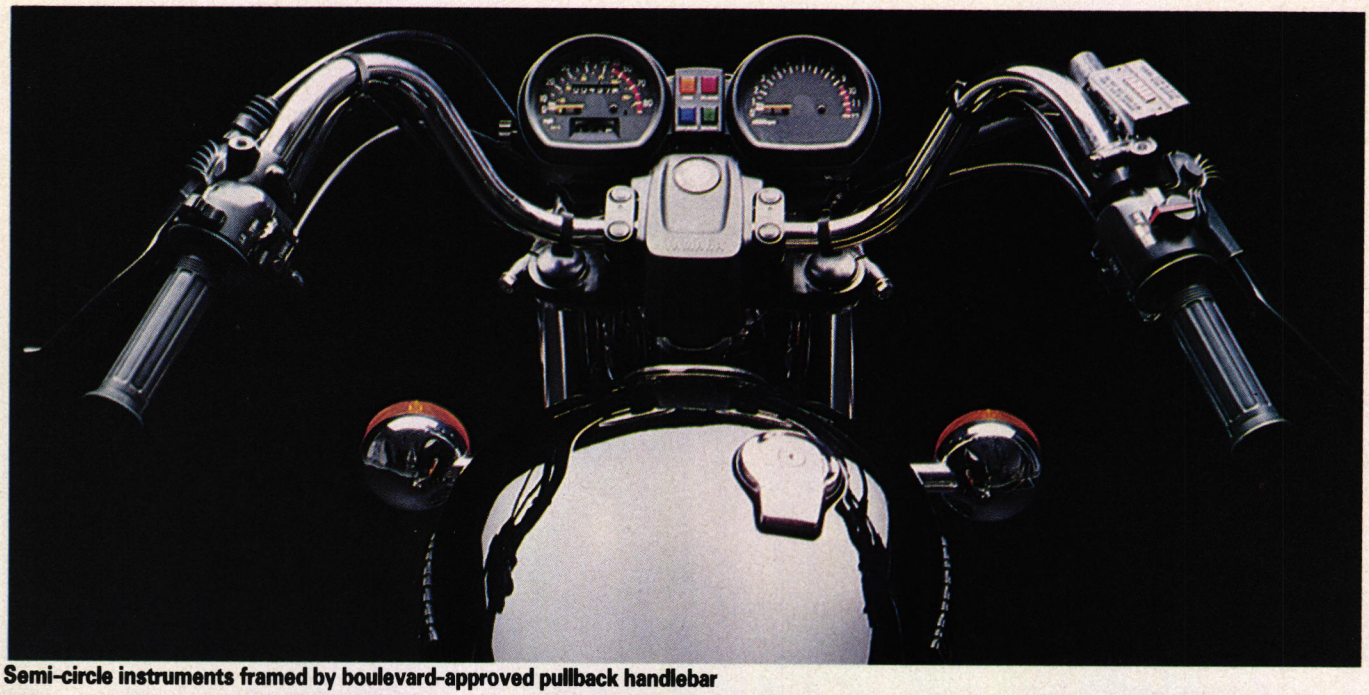
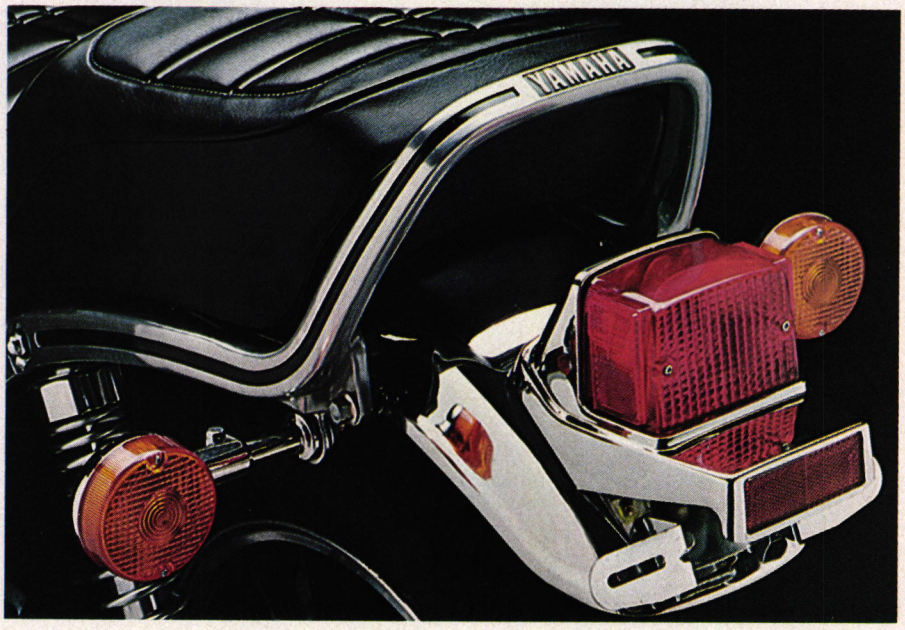


Semi-circle instruments framed by boulevard-approved pullback handlebar

Speed-insinuating swirl-pattern wheels



Split-level tail-and license light

ROBIN RIGGS

Still unmistakably "Special," but advancing the state of street-cruiser art.

of technical sophistication, but that doesn't stop it from being the most blisteringly fast 650 ever built, mostly because its collection of more-or-less conventional bits is cleverly jigsawed together in an unusually sensible fashion. And the Maxim's styling exhibits what Ed Burke, Motorcycle Product Manager for Yamaha, calls a "new image" for the company's Specials. The bike's flowing lines unmistakably are pure Yamaha Special, yet they're different from those on other Specials, having been carefully contoured first to create and then to exaggerate an illusion of lowness.

Then again, the Maxim's low profile is not entirely done with mirrors, because the bike really is exceptionally low. And narrow. And light. And, for a 650 four, amazingly compact. The rider's half of the sharply stepped saddle hovers just 30 inches above ground level, the dual-overhead-cam engine spans a mere 17.6 inches at its widest point, and the Maxim's dry weight is just 453 pounds—almost the same as Honda's 650 Custom and about 25 pounds lighter than Kawasaki's KZ650SR. But what's most impressive about the Maxim's absence of weight is that it was accomplished despite the added bulk and necessary complication of shaft drive, a feature those other 650s don't have.

This compact motorcycle is a result of Yamaha's all-out attempt to give today's American motorcyclist what some extensive rider-research studies have indicated that he wants: Buckhorn-Boulevard styling, shaft drive, exceptional acceleration, good overall handling and not necessarily a lot of bulk. Apparently, according to Yamaha's surveys, Americans are willing to buy smallish motorcycles, but only if they run and look and feel like big bikes.

And so the Maxim I does. Its 12.6-second quarter-mile times and 120-mph top speed not only put it at the cutting edge of

650-class performance by a whopping margin, they also make the Maxim capable of running neck-and-neck with the hottest 750s. Moreover, the bike's scaled-down dimensions tremendously uncomplicate the usual problem of getting a crypto-chopper to handle capably and feel *right*. And somehow, Yamaha has managed to give the Maxim a deep, throaty exhaust growl rather than the high-pitched whine emitted by other four-cylinder 650s. The Maxim sounds, in fact, quite like an XS Eleven—so much so that it takes a discerning ear to tell the difference if you're not looking.

Actually, the Maxim is analogous to the XS Eleven is more ways than what rumbles out of the dual shorty mufflers. Since the engine was designed by Shoji Mizutani, the Yamaha engineer responsible for the Eleven's motor, there are strong similarities between the two. The shape of the two-valve combustion chambers, the external-shim design of the valve tappets and the basic tuning of the power-producing elements of the Maxim's engine all were scaled down from the Eleven. And like its bigger brother, the Maxim has its motor mounted in rubber to give an almost vibrationless ride and rear-view mirror images that always remain as sharp as those on your Magnavox.

Whacking the Maxim's four 32mm constant-velocity Hitachi carburetors wide-open reveals even more Eleven-like similarities. This time it's in power. And although the 650 has nearly a 450cc size disadvantage, it can accelerate with about 95 percent as much fury as the bigger bike. The response is without hesitation of any sort, and that, with the slight shaft-drive rise of the chassis and the booming exhaust note, seems very familiar to anyone who's ever ridden an Eleven. Top-gear acceleration obviously isn't in the 1100's now-you-see-it, now-you-don't league, but it's still fierce enough to launch the Maxim away from the Honda and Kawasaki 650s as though they were stuck at half-throttle.

Much of the engine is not at all like the Eleven's, though, especially in areas related to the Maxim's compact size. The AC generator, for instance, is chain-driven and mounted behind the left side of the cylinder bank *à la* Honda CBX rather than hung conventionally on the end of the crankshaft. And the middle gearcase—the one that turns the power 90 degrees from the transmission's transverse plane to the driveshaft's longitudinal one—has been neatly incorporated into the main transmission cavity rather than being outside it as on the XS Eleven and XS850.

Other engine-shrinking tricks include a direct crank-to-crank geared primary drive, eliminating the pre-transmission jackshaft normally found on four-cylinder engines such as the XS Eleven's. That alone shortened the engine by several inches. The ignition system, though, is quite a lot like the Eleven's in that it's of transistorized breakerless design; but while the 1100 has mechanical spark-advance flyweights working in conjunction with a vacuum advance, the 650 has neither, advancing its spark curve solely by electronic means. And the elimination of the flyweights behind the crank-mounted ignition plate lets the engine be narrower yet.

All of this motor-compacting works so well that you have to wonder when Yamaha's other shafties will get the same treatment. The engine is so narrow that it barely hangs out on either side of the slim 3.4-gallon teardrop gas tank, and it's also short enough to keep the Maxim from looking like a stretched-wheelbase hill-climber or dragbike the way the Eleven does. The wheelbase is, in fact, just over 57 inches in length—about four inches shorter than the Eleven's—yet there's ample room between the engine and the 16-inch rear wheel for an adequately sized battery and sufficient airbox volume. The mechanical simplification hasn't adversely affected the engine's operation, either, for only a slight chattering of the clutch during takeoffs mars what has to be the sharpest-running, slickest-shifting street engine ever found beneath the sign of the crossed tuning forks.

Nor has the handling suffered because of the Incredible Shrinking Engine. Quite the contrary, it has made the Maxim I a more nimble, better-handling funbike than it would have been if designed like most other specials. Granted, boulevard bombers are not intended for carving up mountain twisties with a vengeance, but this one can do it with an ease and precision heretofore unknown on a shaft-drive pseudo-chopper.

You can thank the Maxim's light weight and low center of gravity for the greater part of that agility, not any particular brilliance of chassis or suspension. After all, rubber engine mounts preclude the use of the motor as a frame-stiffening agent, and sit-up-and-beg riding positions do nothing to either engender a feeling of roadraciness or to help the rider create one on his own.

Nevertheless, the Maxim displays a wonderful willingness to be flopped over at sharp banking angles and to be pitched side-to-side in a series of switchbacks, all without the wallowing that normally occurs with shaft-drive bikes. The cornering clearance is about average when the throttle is snapped shut (and the shaft-drive dynamics cause the chassis to squat); but when you're on the gas (and the chassis lifts), there's quite a bit more available lean before bits of the underpinnings start to make sparks. Clearly, the Maxim will never replace the RD400 as America's favorite sport bike, but for a Saturday-night Special, it's not too shabby.

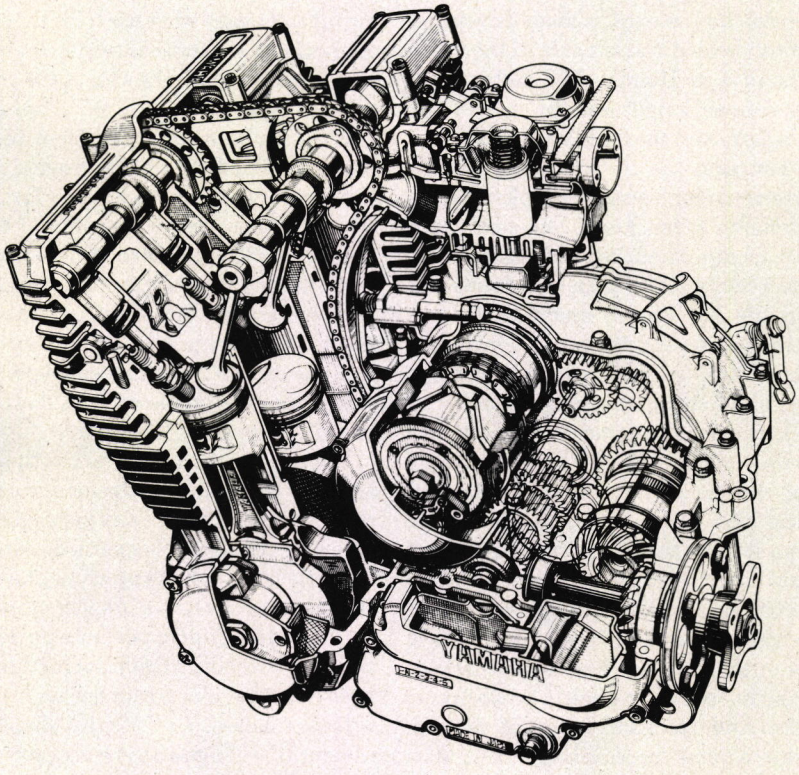
Around town, the Maxim really struts its lightweight handling stuff. It darts through congested traffic or arcs around street corners or executes full-lock parking-lot maneuvers as easily as some 400cc so-called "commuter" bikes. It's in these situations, too, where short people come to appreciate the Maxim's super-low seat. Even stubby-legged riders can get both feet flat on the ground and still maintain a slight bend at the knees.

Those same short riders probably won't be as pleased with the suspension, especially if they prize comfort above cornering. The leading-axle fork is all right, actually, offering a relatively stiction-free ride that's a nice compromise between

PATRICK BEHAR

Continued

Traveling At The Speed Of Light



• The formula for Fast is threefold: high power, low weight or, ideally, *both*.

Sounds simple enough, yet it's surprising how many people get so fascinated with the first part of that equation that they forget about the rest. And they shouldn't, because once all of the hype and window-dressing is stripped away, what speed really boils down to isn't as much horsepower as possible, but the lowest power-to-weight ratio possible. If each horsepower in your engine has to propel, say, seven pounds worth of motorcycle weight, and if you race another bike that has only six pounds for each horsepower to push, the outcome is clear: You're going to lose. And that's regardless of how *many* of those horsepowers your engine happens to manufacture.

If the Maxim I is any indication, Yamaha's engineers haven't forgotten that formula. But how could they? Their company has flat *owned* the high-powered sport of roadracing for what seems like forever, so someone there obviously knows a thing or two about Fast. And what all too often gets shoved aside amidst the wide-eyed adulation of 130-horsepower TZ750 roadracers is that they weigh 20 pounds *less* than a 40-horse RD400 street bike. And that's as responsible for the TZ's outrageous performance as are its big power numbers.

The Maxim is no TZ, of course, but like a good race bike, so much of what it does well is traceable to a lack of weight rather than a glut of power. It has, for instance, the best roll-on *and* quarter-mile acceleration in the 650 class, despite the fact that its state of tune is slightly milder than the Honda 650's and about equivalent to the 650 Kawasaki's. And once again, the Yamaha 650 wins simply because its engine has less motorcycle to haul around.

If you think that all of this is just so much Bull Dip, consider this: The Maxim has a 40 percent smaller engine than an XS Eleven and puts out about 30 percent less power. Yet it is only 5 percent slower in the quarter-mile, 11 percent slower on the top end and gets 15 percent better gas mileage in the bargain. Why? Mostly because it's 20 percent lighter and, to a smaller degree, because it has less frontal area, that's why.

Not only that, when a motorcycle can be made smaller in addition to lighter, it offers the best of all possible performance worlds. Smaller bikes with low centers of gravity are easier to make handle from the designer's standpoint and easier to handle from the *rider's* standpoint. They're also simpler to stop and, usually, capable of delivering longer tire life.

The only significant drawback is that it's often more difficult to make a small, light bike ride as well as a bigger, heavier one. The all-important ratio of unsprung weight to sprung weight usually must be higher on a small-but-powerful motorcycle because the weight of the wheels, tires and brakes can't be reduced as easily as the rest of the bike can be lightened. A high ratio means a choppier ride, especially when there is heavy, unsprung shaft-drive paraphernalia hanging on the rear wheel—which may help explain the Maxim's tendency to harshness at the rear. Still, Yamaha's engineers made an honest effort in this area by designing lighter wheels and opting for just one front disc and a drum rear brake.

Other than ride-quality, though, all of the important side effects of having a light and compact motorcycle go on the positive side of the ledger. And Yamaha is to be further commended for building a 650cc four-cylinder engine that's no wider, no taller and just fractionally longer than that company's 650cc *twin*. Mounting the generator behind the cylinders and eliminating the mechanical flyweights from behind the crank-mounted ignition account for the narrowness; having four 52.4mm-long piston strokes instead of two that are 74mm long is responsible for the low height; and eliminating the pre-transmission jackshaft found on most other four-cylinder shafties has allowed the shortness.

There are numerous other examples of weight- and center-of-gravity-consciousness on the Maxim—such as the MX-like use of lightweight plastic as a seat base and the placement of the heavy battery very low in the frame—but the message should already be clear: Horsepower is your friend, friend, and weight is The Enemy.

More important, though, is that the Maxim points the quick way to the high-performance future of motorcycles. If the high costs of fuel, living and borrowed money continue to escalate—which they most certainly will—hyperbikes such as the CBX, GS1100 and XS Eleven will become relics of the past, antiques to be seen only in the pages of history books or in the halls of don't-touch motor museums. Because no one will be able to afford them, feed them or even justify them.

Bikes like the Maxim, though, could carry on with high performance in grand style. If that happens, the superbike of 1990 undoubtedly will be even smaller than the Maxim, but probably will be faster in the bargain. And better-handling. And more fuel-efficient. So motorcyclists don't have to give up their love for speed in the Eighties and Nineties; they just have to alter the way in which they achieve it.

—Paul Dean

boulevard-cruiser cushy and backroad-bullet firm—a compromise necessitated by the absence of any air assist or damping adjustments. And over rolling, gradual bumps, the rear shocks also supply an acceptable ride while maintaining enough wheel control to prevent wallowing during brisk cornering. But when the Maxim strikes an abrupt bump—such as a small chuckhole or a sharp pavement wrinkle—you get a thump in the nether regions that stays with you awhile.

Our heavier test riders weren't fond of the rear suspension for that reason, but thought they could live with it. Riders in the 140-to-165-pound range, however, absolutely *hated* the shock action on anything but a glass-smooth road. And most agreed that the problem seemed to stem from a surplus of compression damping rather than an excess of spring rate, for it only occurred when the rear wheel was asked to move upward very quickly.

This business of ride quality isn't helped at all by the Maxim's seat. It's excellent in terms of shape and height but too hard. Yamaha seems particularly proud of the seat's padding, which includes a square of softer foam inset at the base of the rider's segment. The question, though, is not one of quality but of quantity, for in the quest for an unusually low seat, the padding was not made thick enough. Thus the seat isn't able to absorb much of what gets past the shocks, and numbbutt also sets in after only about a half-hour in the saddle.

That's too bad, because there's nothing else on the bike that intrudes on rider comfort. The location of the controls is just like on the big bikes, and even the pullback handlebar isn't all that objectionable to non-cruiser types. Everything's easy to operate, too, from the light-pull clutch to the drum rear brake that is more pleasant and predictable than most rear discs.

Maxim's standard-equipment cable lock

Nice thought, silly-putty execution.

That drum brake and its partner, the single front disc, are mounted on perhaps the most stylish cast wheels ever delivered as standard equipment. Each of their five dual-leg spokes swoops outward from the hub to the rim in a pinwheel pattern, making the Maxim look like it's going fast even when it's chained to a utility pole.

If, in fact, you do feel the urge to lash this bike to a pole, Yamaha has already supplied the chain in the form of a chain-and-lock anti-theft device that's standard on the Maxim, stored in a little compartment just below the left sidecover. It's not a very effective deterrent, though, for the chain's links are made of quickly hacksawable mild steel and the lock can easily be pried apart with a plain old screwdriver. It may keep your best friends off of your Maxim, but that's about all.

Frankly, though, keeping people off of a Maxim could prove to be a problem, since for one reason or another it makes them want to climb aboard and ride off into the sunset. Much of the bike's appeal, of course, is either its bad-dude styling or its mind-fuzzing acceleration, depending upon which school of street-bike philosophy you adhere to. But this is one chopperette that needn't cringe at the sight of a curve in the road. It can hold its own with most comparable sportbikes in the twisties, and yet it won't cause a boulevard hero any embarrassment when he profiles past the guys on the corner or squares off with a bigger bike at a stoplight.

It's a good thing, too. Because quick quarter-miles or no, going up against a total of four custom and standard 650s from Honda and Kawasaki with a single custom-styled Yamaha is a bold move in any street-fighter's book. Despite what the sales numbers have to say about specials, there still are lots of rabid sportbikers out there who wouldn't be caught dead on a buckhorn-barred, low-riding 650. So unless they're willing to invest considerable time, expense and aggravation in the purchase and importation of the Euro-version Maxim, they'll be most likely to buy their 650s from either Honda or Yamaha.

But maybe not. Maybe when confronted with a Special that's as special as the Maxim I, they might lose all interest in a bog-standard *un*-special. Especially if that Special is a 650 that can give most 750s fits.

Yamaha obviously thinks so. But the question is, do you? •

Ride Review

• I can't shake the feeling that Yamaha diligently trimmed away all the fat from the XS Eleven Special until the hard core was exposed—and the result is the Maxim. The 650 is the essense of the Eleven, with the same provocative exhaust note, the same raw mid-range power, the same seductive riding position.

Mostly I think the idea of building a smaller Eleven is a good one—it's the kind of performance bike Americans understand. But the 650 also partakes of the same flaws as the Eleven Special. The suspension, especially at the rear, feels out of synch both in terms of comfort and high-performance, and the seat is too firm.

If Yamaha wants the 650 to be a true all-around performance bike, the potential is there. But in this incarnation, it represents a downsized, more agile Eleven to me.

—Michael Jordan

• You've got to like a 650 that goes like stink, sits close enough to the ground for even low-altitude types to profile at stoplights and emits stirring, compelling sounds when the throttle is yanked open. At least, I do. And tossing both light weight and a lashless shaft drive into the bargain doesn't hurt, either. All told, Yamaha's Maxim is the first factory custom that ever made me *want* to find some twisties—and the first one that didn't leave me disappointed when I was through. In fact, save for a thinly padded seat and shocks that seem over-fond of full extension, the Maxim is spot-on. And given its proficiency at carving up the canyons, it's a wonder to me that Yamaha didn't provide U.S. buyers with a choice of configurations. As far as I'm concerned, if Yamaha brought the Euro-styled version over, the tuning-fork factory would have the best 650s in both the cruiser and standard slots.

—Larry Works

• What we don't need from Yamaha is one more Special. I had hoped that the Maxim I would be a real sport bike: quick on the straights and agile through the corners.

Oh, it's quick, all right. In fact, Yamaha produced what Kawasaki attempted in 1976: a 650 that performs like a 750. But as far as I can see, the Maxim doesn't have its own sport personality. It's just a slimmed-down 1100 Special, both in performance and in appearance. I'd rather have Yamaha send us the Euro-version—which should perform as well through the quarter-mile, and offer the kind of ride through the turns that I like.

The Maxim's trim-line four concept is *avante-garde*, but to me, the execution is just *status quo*; it's just another Special from what I see. Yamaha, do what you want with the Maxim, but give us the Euro-650, too. That's a special request from me.

—Dain Gingerelli

Continued

Yamaha Maxim I

SPECIFICATIONS:

Importer: Yamaha Motor Corporation
6555 Katella Avenue
Cypress, California 90630

CATEGORY: street

SUGGESTED RETAIL PRICE: $2799

ENGINE

Type ..... transverse four-stroke vertical four
Valve arrangement ..... double overhead camshafts
Bore and stroke ..... 63.0mm x 52.4mm
Displacement 653.0cc
Compression ratio 9.2:1
Carburetion ..... four 32mm Hitachi constant-velocity
Air filter ..... disposable pleated paper element
Lubrication ..... wet sump
Starting system ..... electric only
Ignition ..... transistorized pointless; dual electronic pickups / dual coils
Charging system ..... 12-volt; AC generator / voltage regulator / rectifier

DRIVETRAIN

Primary drive ..... helical gears
Primary drive ratio 1.67:1
Clutch ..... wet, multi-plate
Transmission-to-middle-gear drive ..... straight-cut gears
Transmission-to-middle-gear ratio 1.36:1
Middle-gear-to-driveshaft drive ..... spiral-bevel gears
Middle-gear-to-driveshaft ratio 1.06:1
Driveshaft-to-rear-wheel drive ..... spiral-bevel gears
Driveshaft-to-rear-wheel ratio 2.91:1

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.19	15.29	4.8
II	1.50	10.47	7.0
III	1.15	8.03	9.1
IV	0.93	6.49	11.3
V	0.81	5.65	12.9

SUSPENSION/WHEEL TRAVEL, IN.

Front ..... 36mm stanchion tube diameter / 5.8 in. (147mm)
Rear ..... 5-way adjustable spring preload / 3.8 in. (97mm)

BRAKES

Front ..... single-action hydraulic caliper, 11.8-in. (300mm) disc
Rear ..... drum, single-leading shoe, rod-operated

TIRES

Front ..... 3.25H19 Bridgestone Mag Mopus
Rear ..... 180/90-16 Bridgestone 67H

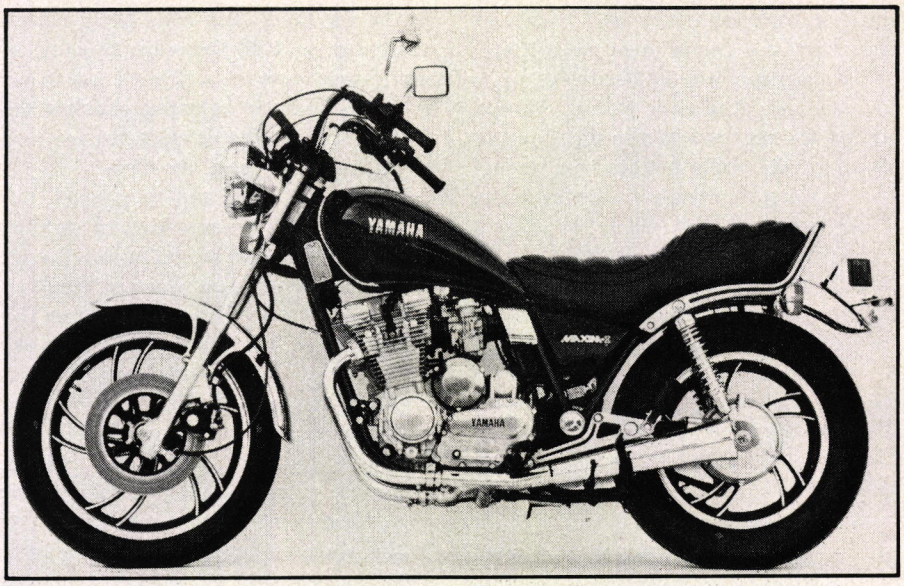
DIMENSIONS AND CAPACITIES

Weight ..... 453 lbs. (205.4kg)
Weight distribution ..... 46.1% front, 53.9% rear
Gross vehicle weight rating ..... 1025 lbs. (465kg)
Wheelbase ..... 57.1 in. (145cm)
Seat height ..... 30.1 in. (765mm)
Handlebar width ..... 27.5 in. (698mm)
Footpeg height ..... 12.0 in. (305mm)
Ground clearance ... 6.3 in. (160mm), at exhaust header clamp
Steering head angle ..... 29 degrees from vertical
Front wheel trail ..... 4.88 in. (124mm)
Frame ..... tubular mild steel, double front downtubes
Oil capacity ..... 2.3 qt. (2.2 l)
Fuel tank ..... steel, 3.4 gal. (12.9l), including 1.0 gal. (3.8 l) reserve
Instrumentation ..... speedometer, odometer, tripmeter resettable to zero, tachometer

PERFORMANCE

Fuel consumption ..... 40 to 54 mpg (17 to 23 km/l)
Range, maximum ..... 136 to 184 miles (219 to 296 km)
Range, reserve only ..... 40 to 54 miles (64 to 87 km)
Speedometer error, 30 mph indicated ..... 29 mph actual
Speedometer error, 60 mph indicated ..... 58 mph actual
Best ¼-mile acceleration .... 12.60 sec., 107.4 mph (173 kph)
Top speed (calculated) ..... 120 mph (193 kph)
Stopping distance from 30 mph ..... 30 ft. (9.1 m)
Stopping distance from 60 mph ..... 128 ft. (39.0 m)

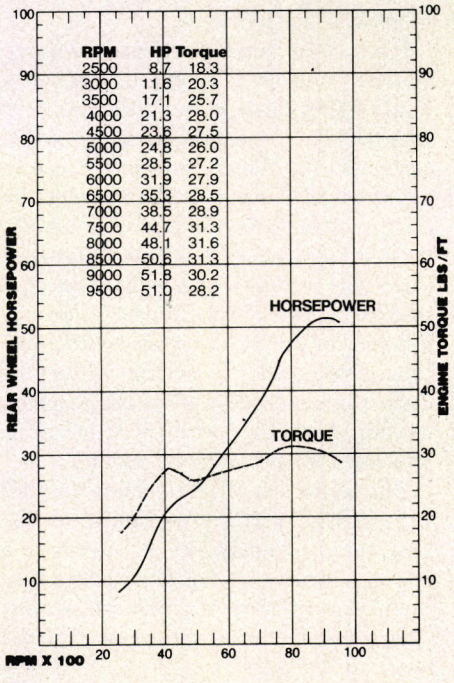
All weights and measurements are taken with machine unladen and fuel tank empty.

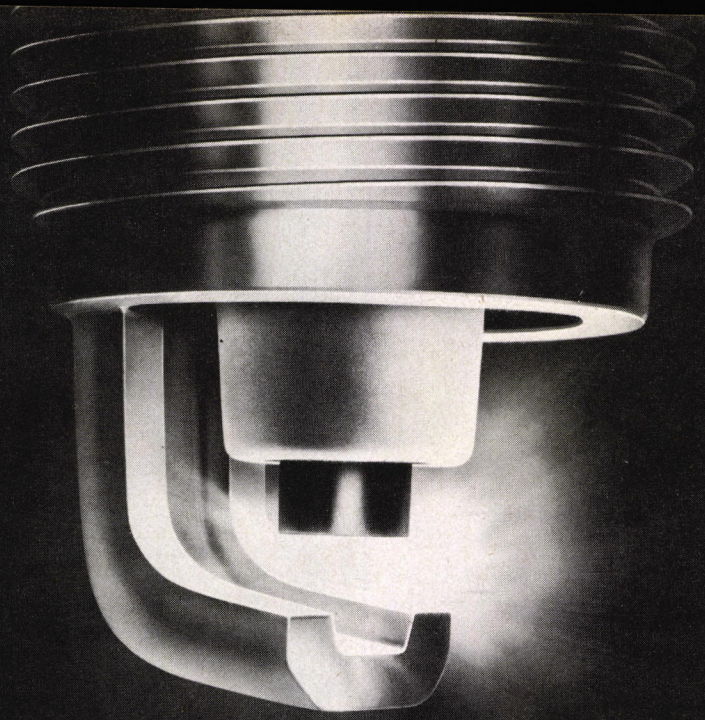


COMPARATIVE TEST DATA:

Make	Quarter-Mile, sec/mph	Top Speed, mph	Weight, lbs	Stopping Distance From 60mph, ft.
Yamaha 650 Maxim	12.60/107.4	120	453	128
Honda CB650 Custom	13.10/99.8	113	447	131
Kawasaki KZ650 Custom	13.16/100.2	116	483	125
Suzuki GS750LN	12.87/103.5	120	526	129
Yamaha XS850SG	13.10/101.7	116	548	144
Triumph Bonneville Special	13.94/96.2	110	411	175

PERFORMANCE:





KABOOM!

HOT "U" AND TEAM YOSHIMURA EXPLODE THE MYTH THAT ALL PLUGS ARE CREATED EQUAL.

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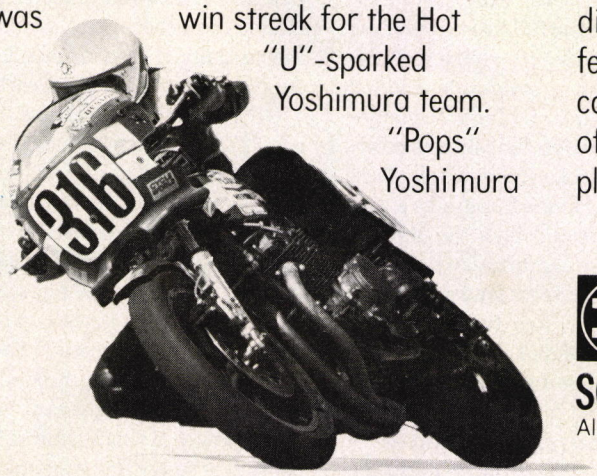

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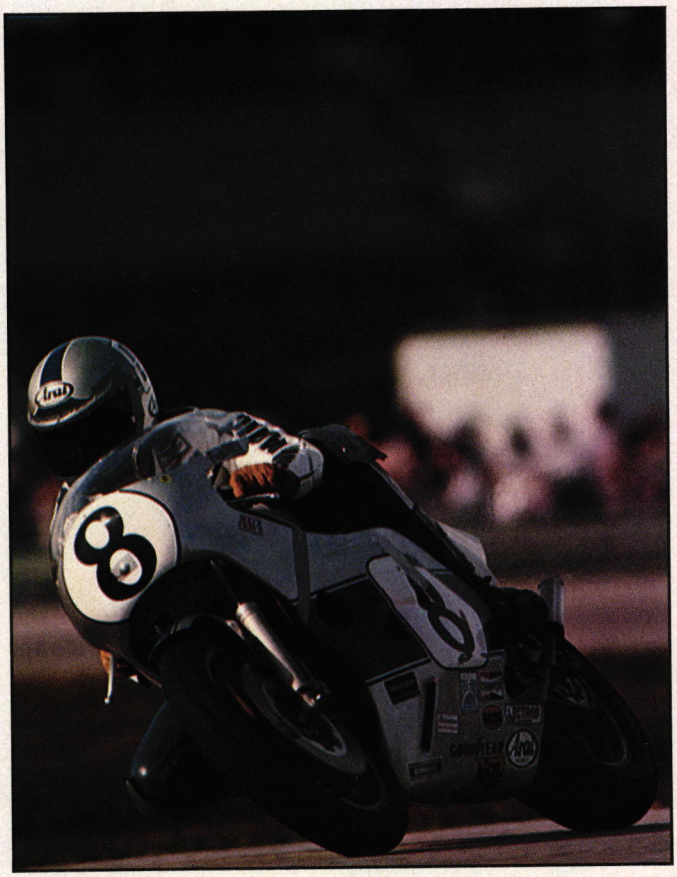
COUNTING STROKES IN DAYTONA BEACH:

Thunder in Florida

Four-strokes versus two-strokes at the Daytona 200.

BY MICHAEL JORDAN



Daytona's track-wise railbirds knew a two-stroke would take home the winner's purse in the 39th running of the Daytona 200. But they lacked some information on their tout sheets. Real four-stroke GP bikes with 1000cc engines packed full of coiled thunder were in the starting gate this year.

Even so, few people expected the four-strokes to win the race, especially after Kenny Roberts qualified his Yamaha 750cc two-stroke five seconds faster than the quickest four-stroke. There was another serious question to be answered, though: How would the four-strokes measure up? On one hand, two-stroke purists disdained the oily antiques. On the other, the wide-eyed devotees of "Thunder Bikes" hoped that there was more to racing than the purists knew. Everyone hoped to discover in the finishing order of the Daytona 200 if four-stroke GP bikes were real threats—or just hype to bolster declining interest in the GP class.

Three varieties of four-stroke bikes sprang full-grown from the AMA's new 1980 rulebook, combining endurance racing technology and English Formula 1-bike hardware. Yoshimura gridded three Suzukis for Wes Cooley, Dave Aldana and New Zealander Graeme Crosby. Honda built two F/1 bikes on the tenth anniversary of its victory in the 200 with a four-stroke 750 ridden by Dick Mann. The time required to prepare the Honda Superbike entry, however, meant that only Ron Pierce would take the starting grid. Finally, Team Moriwaki, a Japanese organization noted for its endurance racing bikes and the fact that team leader Momoru Moriwaki is Pops Yoshimura's son-in-law, had two Kawasaki-engined entries for Masaki Tokuno and Eddie Lawson.

After testing in Japan under the watchful eyes of Suzuki engineers and Pops Yoshimura himself, the Yoshimura F/1 bikes arrived at Daytona with Fujio Yoshimura expecting success. A frame developed from Suzuki's GP-racing experience and then modified at Cooley's request held a standard Yoshimura Superbike engine with 31mm carburetors. The data books that accompanied the trick KYB suspension were supposed to expedite adjustment for Daytona's combination of steep banking and flat infield corners. Large 310mm-diameter brakes did their best to slow the 365-pound package.

Moriwaki's experience in endurance racing produced a set-up similar to Yoshimura's. Indeed, Moriwaki began development of his Kawasaki engines years ago as part of the Yoshimura outfit in Japan, but struck out on his own once the emphasis in research and development shifted to Suzuki engines.

The Honda Formula 1 bike acquired an aura of mystery, although most reports indicated that it simply combined the best of the factory's RCB racers with the best from Honda Great Britain's Isle of Man racers. The same engine that powered the Honda Superbikes was fitted, although with factory carburetion. Pierce claimed that it made less horsepower than the Superbike engine with its trick pipe, carburetors and cylinder head.

CG's Contributing Editor John Long, who would ride a familiar TZ750 in the 200, assessed Daytona's crop of Yamaha two-strokes as "tried and true." At first the new TZ500 was expected to be a threat, but those who rode them, as Long did in practice, quickly pronounced them "Not Competitive." Racers had hoped the 500 would produce almost as much power as the 750 and handle like a 250. The reverse seemed true.

The two-stroke bikes qualified well, though, despite their lack of tricks. Roberts recorded a trap speed of 179 mph on the way to the pole, while young Freddie Spencer, in his first outing as an AMA Expert, sat right next to him with a trap speed of 177 mph. There was some confusion as to whether Spencer's bravery in the corners or tuner Erv Kanemoto's bag of homebuilt hardware was

responsible for Fast Freddie's qualifying time, but most charged it off to the testing mileage Spencer and the Yamaha rolled up by slipping onto the track during the three days Honda rented it in a futile attempt to dial in its Superbikes.

Cooley qualified on the outside of the front row after challenging the vaunted KYB data book in order to soothe a chattering front wheel. Crosby and Aldana, meanwhile, couldn't get along with their anti-dive brake systems and gobbled up six engines between them—Aldana's last 45 minutes before taking the grid for the 200. On Saturday night, the Yoshimura mechanics tore down their nine engines in order to make three good ones. Crosby qualified on the outside of the second row. Aldana was in the fifth. Moriwaki followed Yoshimura's lead by putting Lawson in the third row and Tokuno in the seventh.

Pierce and his Honda nearly missed the race. He tested the bike at Riverside before Daytona and called it "the best steering bike I've ever ridden on the pavement." But the back end was chattering so badly that he thought the bike had a warped disc. As he said, "We didn't modify the upright rear shocks because we wanted to see how the factory thought they should work . . . So the bike sat in a corner until Daytona, because we figured that only brake work was needed. We were wrong—it needed rear suspension." Band-aids were applied—somehow the shocks were cantilevered, and the night before the race a full-floating rear brake was fabricated—so Pierce lined up on the fifth row.

The handicappers weren't disappointed by the race. Cooley took the holeshot, only to slide wide in Turn 2 because of cold tires, allowing a hard-charging Crosby through to lead the first lap—only to lose it himself by overshooting Turn 1 under braking. As expected, though, a two-stroke led the last lap, ridden by 1979 750cc GP World Champion Patrick Pons. In between, Spencer led every lap except the first and the last six, pulling away from the field at a two-to-four-second pace only to grind to a halt with a squealing crankshaft—a sure sign of engine ill-health. Roberts' Daytona luck ran true to form. He pitted on the second lap with two throttle cables stuck wide open, the result of dirt swirling off the motocross track and settling on the grid moments before the green flag, Yamaha's Ken Clark claimed.

The four-strokes did finish, though, and a few things were learned about the threat they pose to the all-conquering Yamahas—but only because a rain squall halted the race after the tenth lap for nearly three hours. Cooley had noticed a mist of oil on his windscreen on the fourth lap and thought it was from his fork tubes. A lap later oil covered the windscreen and his leathers. With a glance down at his engine, he pulled off with a blown head gasket. Pierce found his Honda geared so tall it couldn't even reach its conservative 9500-rpm redline—1000 rpm below its limit. These problems were corrected while rain held up the race. Still, the two-strokes appreciated the break as well. Second-place finisher Dale Singleton rejetted his carbs and was thankful that he now had a pair of Goodyears scrubbed in and ready to race, while fourth-place rider Skip Aksland replaced his ignition.

Continued

A confrontation of racing philosophies shows the shape of things to come in the 1980 roadracing season

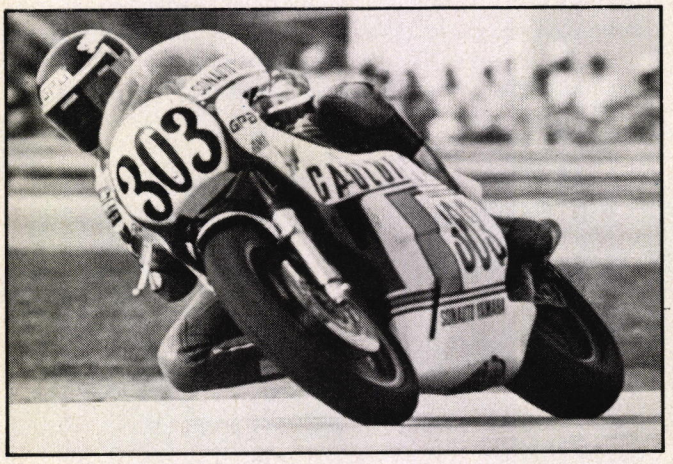
Spencer's Kanemoto-tuned Yamaha grabs the headlines while four-strokes (Crosby, 316) battle two-strokes (Romero, 3).

PHOTOGRAPHY: ROBERT HARMEYER JR.

PATRICK BEHAR

Yoshimura pits register the aftershocks from engine explosions

Making three good engines from nine bad ones.



Patrick Pons' Yamaha

Smoking his way toward victory.

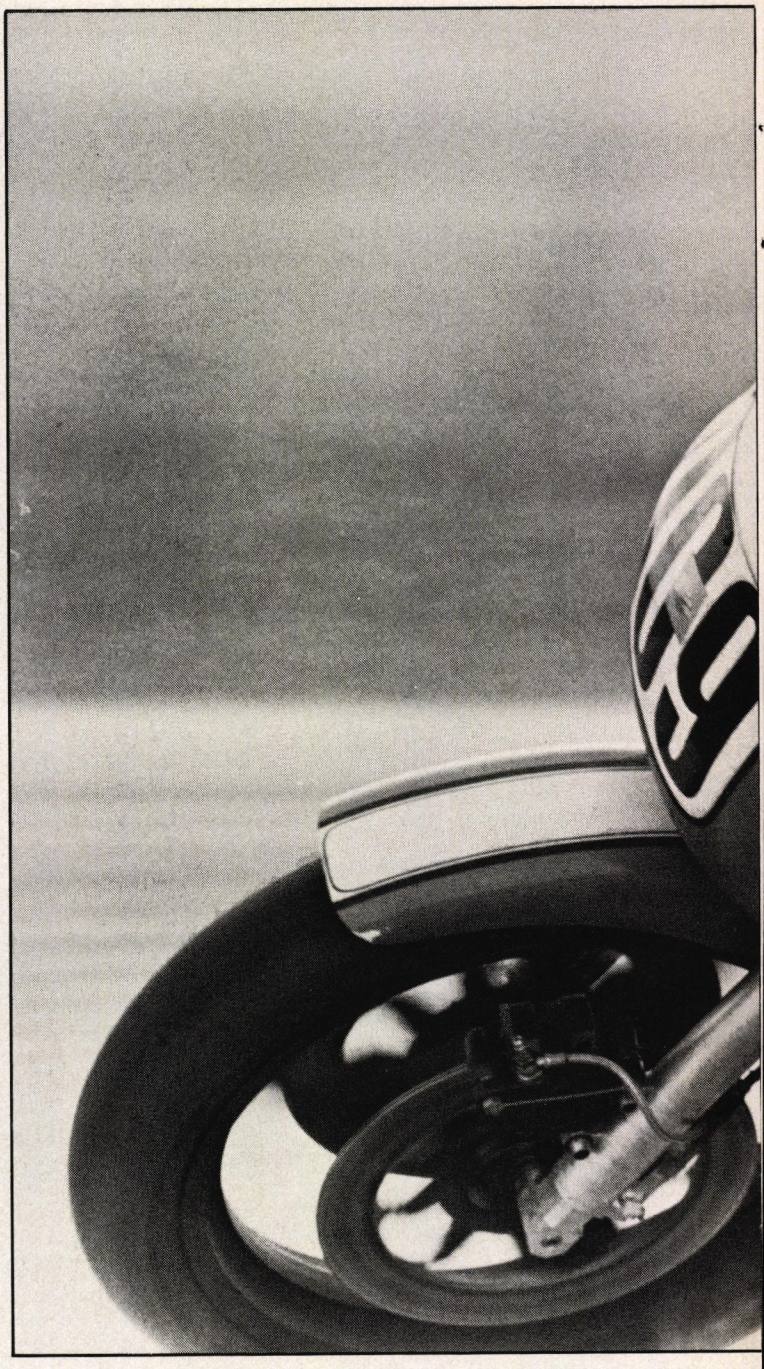
Aldana and Yoshimura F/1 Suzuki

Fast enough to dispute second place.

PATRICK BEHAR

Lawson wrestles Moriwaki

Kawasaki takes the first fall.



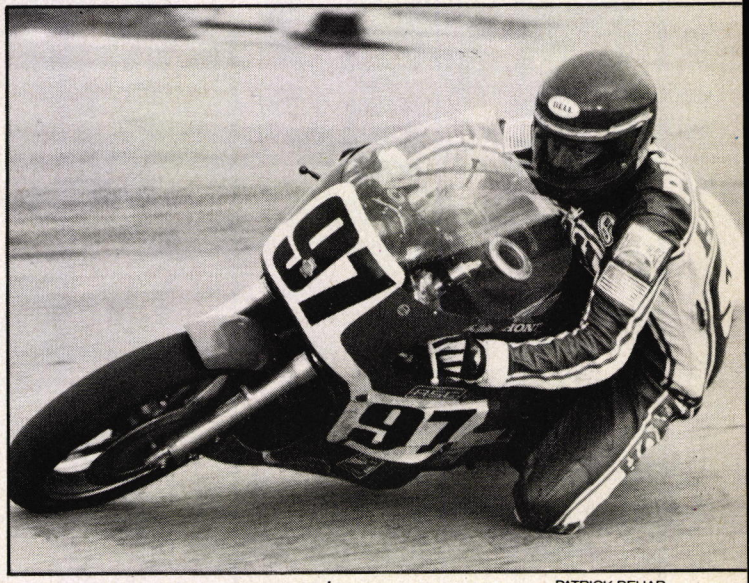
Once the race restarted, the four-strokes thundered (although their exhaust note was nearly impossible to distinguish from those of the two-strokes) to the flag. Aldana rode to sixth place while Yoshimura placed him second on its lap charts. Pierce finished in seventh to jubilation in the Honda pit. Cooley rode with a broken tach to finish the same number of laps behind the leader as he started. Eddie Lawson crashed while chasing Pierce in Turn 1. His teammate had also gone down earlier.

For the most part, the four-stroke riders were pleased with their performance. Cooley acknowledged that he'd "never been around Daytona this fast, so you've got to think four-strokes are competitive." Pierce reported in the champagne-drenched Honda pit that he had lost the rear brake when the stay arm broke because of rear wheel chattering, and that he was forced to use the engine as a brake—"I was downshifting the piss out of it, all the way over to 10-five and 11,000 rpm and the engine took it. In fact, I think it ran a little better after that." Indeed, the mechan-

ics pronounced the motor ready for another 200 miles.

Only Eddie Lawson was disappointed by the four-stroke racers. During practice, he said, "the bikes just wouldn't stop. And they vibrated real bad. At the end of a day, I couldn't feel my hands at all." Brakes from Kawasaki's Superbike helped slow the Moriwakis, he said, but the bikes were still clumsy. And because the engine was carried low in the frame, ground clearance was disappointing as well. He was glad to hear that Moriwaki would return to Japan for the remainder of the year.

On the other hand, both Cooley and Pierce think their bikes can be competitive. Cooley thinks his 174-mph top speed gives up too much to Roberts and Spencer on long straights, while Pierce thinks better rear suspension will solve his problems. As Pierce says of four-strokes, "The acceleration is really good around the corners. We gain all kinds of time in mid-turn. There's a lot less wheelspin because of better, smoother response, so you get a better drive out of the corners and you can accelerate harder



Pierce and RCB-derived Honda F/1 PATRICK BEHAR

Getting an edge in slow corners.

Continued

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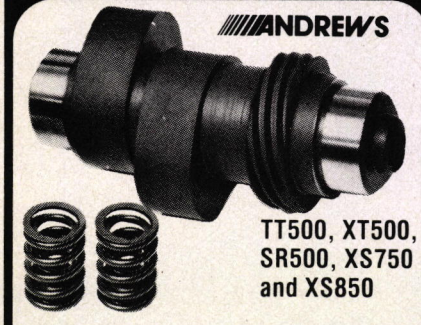

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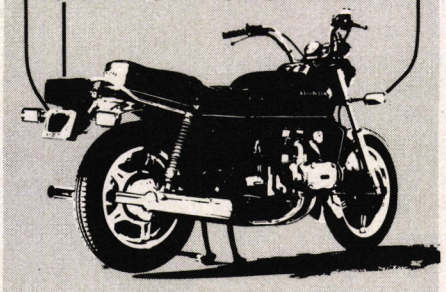

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than a two-stroke."

As a two-stroke rider, *CG*'s John Long is a little dubious. Problems with a stuck refueling vent relegated him to 28th spot, but early in the race he ran in sixth position, passing Crosby without a second thought, he says. Long also says of four-strokes "The rear end chatters under braking and they don't know if they can turn or not, so they have to go straight until they feel safe." This problem plagued Crosby until he ran out of brakes. Pierce also complained of the Honda's rear end "chattering so bad I could hardly see." Meanwhile, Cooley says, "My main problem is the engine slowing down faster than the wheels and locking up the tire . . . I want the engine to ride like a two-stroke, maybe with no flywheel weight."

The four-strokes did make an impression on other racers, though. Some think that the four-stroke engine's acceleration will give it an edge at tracks like Loudon that have slow corners. Others believe the bikes will be better on circuits with high-speed bends like Road Atlanta, where their agility wouldn't be a factor. Yet everyone agrees that the four-strokes pose problems. Not the least of which is the fact that the engines cost nearly as much as a second-hand TZ750, are complicated and require lots of skilled mechanical help. The privateer who functions as a one-man band could never cope with a highly-stressed F/1 four-stoke. As John Long says, the privateer couldn't even afford a truck big enough to carry all the parts he'd need.

Ron Pierce really isn't interested in the 50 percent more time required to maintain a four-stroke bike, though. Instead, the comments of Gene Romero and Ken Clark about the five or six quarts of oil a four-stroke might dump onto the track make four-strokes a point of personal pride with Pierce. Even though Honda knew it couldn't win the 200 this year, he says, "we wanted to prove that four-strokes could go at Daytona without splattering oil. We wanted to show their performance and dependability."

It's this remark that draws the battlelines of the inaugural season of AMA's Formula 1 rules. Naturally, there's some doubt about whether a four-stroke racer is a better competition machine than a two-stroke. But the real question is whether four-strokes are real race bikes instead of oily antiques disguised by a lot of hype. At Daytona the four-strokes proved they deserve to be on the same track as the Yamaha TZs in the minds of some, but it will take more than one race to change the minds of the two-stroke fanatics. •

PRODUCT EVALUATION:

CycleTogs HelmetLock

Check your hat, sir?

• When you've ridden your bike all day and finally arrive where you're going, one thing worse than having your friends bring light beer is the realization that you now must drag your helmet along everywhere you go.

You could of course strap that $100 investment to your bike's built-on helmet lock and let it dangle from its D-ring, waiting for a pilferer to pass by with bolt-clippers. But you opt for the safer choice of carrying it through the four-hour tour of the Museum of Antediluvian Anthropoids. Until, that is, the guard at the gate informs you that all baggage must be left behind.

CycleTogs International at P.O. Box 19414a, Portland, Oregon 97219 offers its HelmetLock as one solution to this kind of problem. The device attaches to your motorcycle and is designed to secure either one or two full-coverage helmets by encircling the face guard in its locking jaws.

The idea is a good one and CycleTogs seemingly carried it through; the lock is fabricated of a tough, non-marring plastic, sturdy enough to dissuade the casual thief. However, the hacksaw-toting filcher will find that the solid plastic construction puts up little resistance.

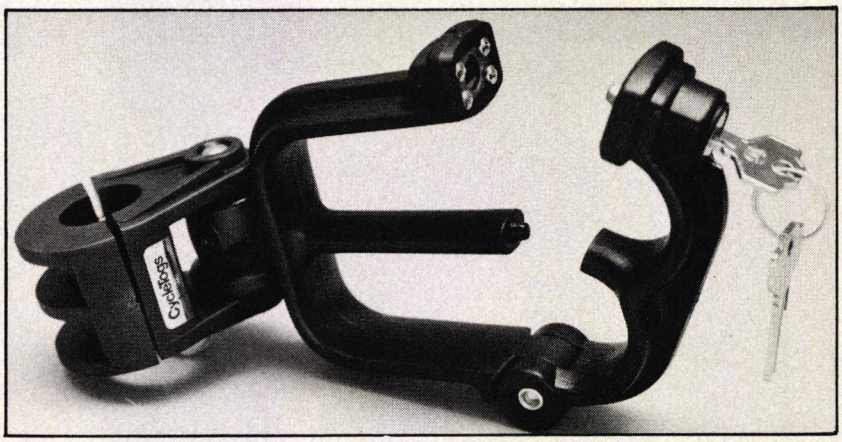
A close examination of the lock shows few surprises. The hinge of the device is spring-loaded in two positions, allowing it to fold out for service or to fold back when not in use. The HelmetLock mounts to any tube with a diameter of 13mm, 16mm, 19mm or 22mm (the standard ⅞-inch handlebar diameter)—plastic bushings are provided for the three smaller sizes. Also provided is a socket wrench for the three-sided head on the bolts that hold the unit onto the motorcycle (the non-tampering aspects of the bolts can be bypassed with a pair of pliers, though). The lock that secures the helmet features a pin-tumbler mechanism and comes with two keys. Installation is as simple as selecting a location and bolting on the HelmetLock.

Now, at this point you're probably anxious to test this nifty unit. You open the shield of your Bell Star II, place the face guard in the HelmetLock, bring the hinge down and find, unfortunately, that your helmet doesn't fit. CycleTogs, whose slogan reads, "Outfitters of discerning motorcyclists" seemingly missed the boat when it built its HelmetLock jaws with a span too short to enclose many popular helmets.

Now, of course, there *are* helmets the HelmetLock will fit. but an earlier Simpson isn't one of them and neither is Simpson's Darth Vader RXM-1. Some Shoei helmets will lock within the allowable space, and if you've got a new Simpson 60 with the collarbone notch, you're in luck. But if you haven't, you're not. To confuse the situation even further, ordering instructions for this bolt-on prize make no mention of which helmets will fit. You pays your money and you takes your chances.

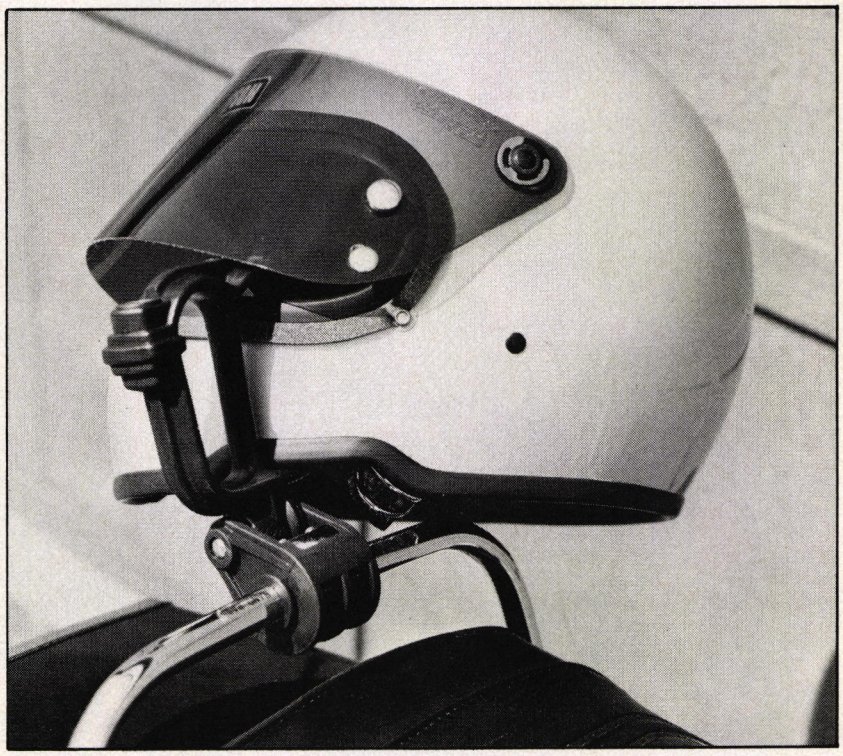
CycleTogs' promotional material for this product asks the question, "You spent a bundle to protect you head, now how do you protect your investment?" Unfortunately, for many of us protecting $100 heads, this HelmetLock is not the answer.

—Terri M. Craig



CycleTogs HelmetLock with pin-tumbler locking jaws

Hinging on a good design.



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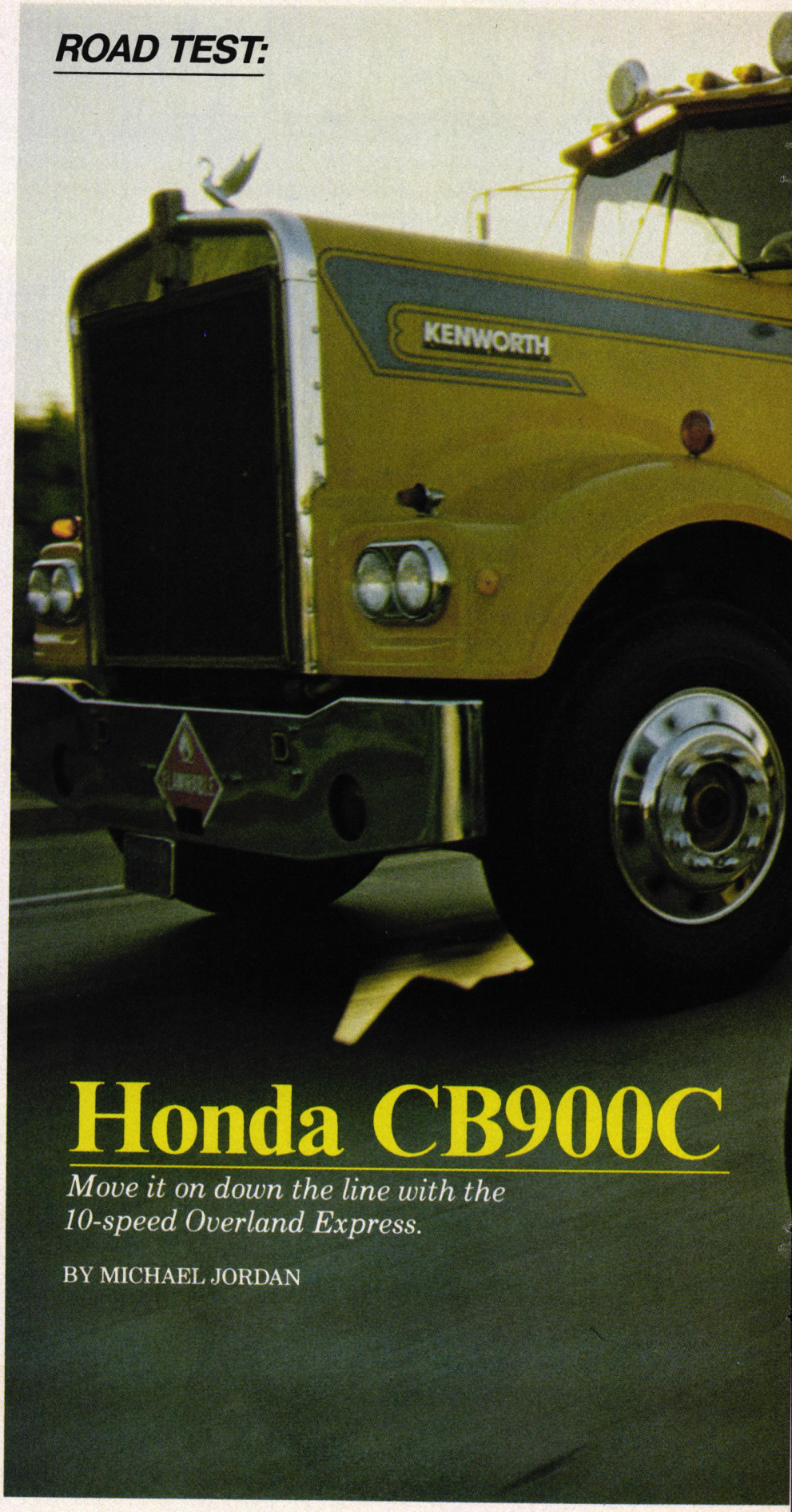

Honda CB900C

Move it on down the line with the 10-speed Overland Express.

BY MICHAEL JORDAN

Honda's CB900 Custom swaggers along the open road like the two-wheeled equivalent of some star-spangled truck, 10 ratios in its transmission and a bold, winged emblem on its fuel tank. Like the massive Kenworths, Peterbilts and Whites that pound the pavement across the continent, the 588-pound 900C is bred to the wide-open spaces of America, in its styling as well as its ability to swallow long distances at a single gulp.

It's tempting at first to dismiss the Custom as a cynical amalgamation of two-wheeled themes, for its shape has been determined almost solely by market research. The 900cc four-cylinder motor carries the high-performance credentials that Americans demand, but it's also rubber-mounted to provide the insulation from vibration that Americans prefer. Then there's shaft drive, a growing preference in the U.S. Air-spring suspension fore and aft, adapted from the GL-1100, beckons touring riders. Meanwhile, Honda's new custom styling comes closer to hitting the mark than its previous attempts at the American idiom. And finally, the hardware chosen to flesh out this design is derived from other motorcycles—the engine from the Euro-CB900F, the 10-speed transmission concept from the CT-90 trailbike, the suspension from the Gold Wing and the shaft drive from the CX500. Like the Universal Japanese Motorcycle, the 900 Custom attempts to be all things to all people by forcing disparate components into a single package.

Yet that's just what Honda intends. Studies conducted by Honda Research Center in Torrance, California discovered that a large number of people still lust after a multi-use motorcycle, despite the recent trend to single-purpose bikes. They want a bike that will look good, go fast and be able to occasionally motor for great distances. A large-displacement engine for a flexible powerband, shaft drive and American styling are the requirements.

To fulfill this image of the one-size fits-all motorcycle, the Custom incorporates a wide-range of concepts—yet each piece of hardware strives for perfection, not mediocrity. And so, surprisingly, Honda has developed a functional motorcycle that hits the crease where the three types of enthusiasts overlap—profiler, performer and tourer. You really *can* do just about anything with this bike.

At the heart of the 900 Custom lies an engine guaranteed to quicken the pulse, a 16-valve twin-cam Four capable of hustling the bike to 12.44-second quarter-miles while remaining perfectly civilized around town or on the Interstate. In 1976,

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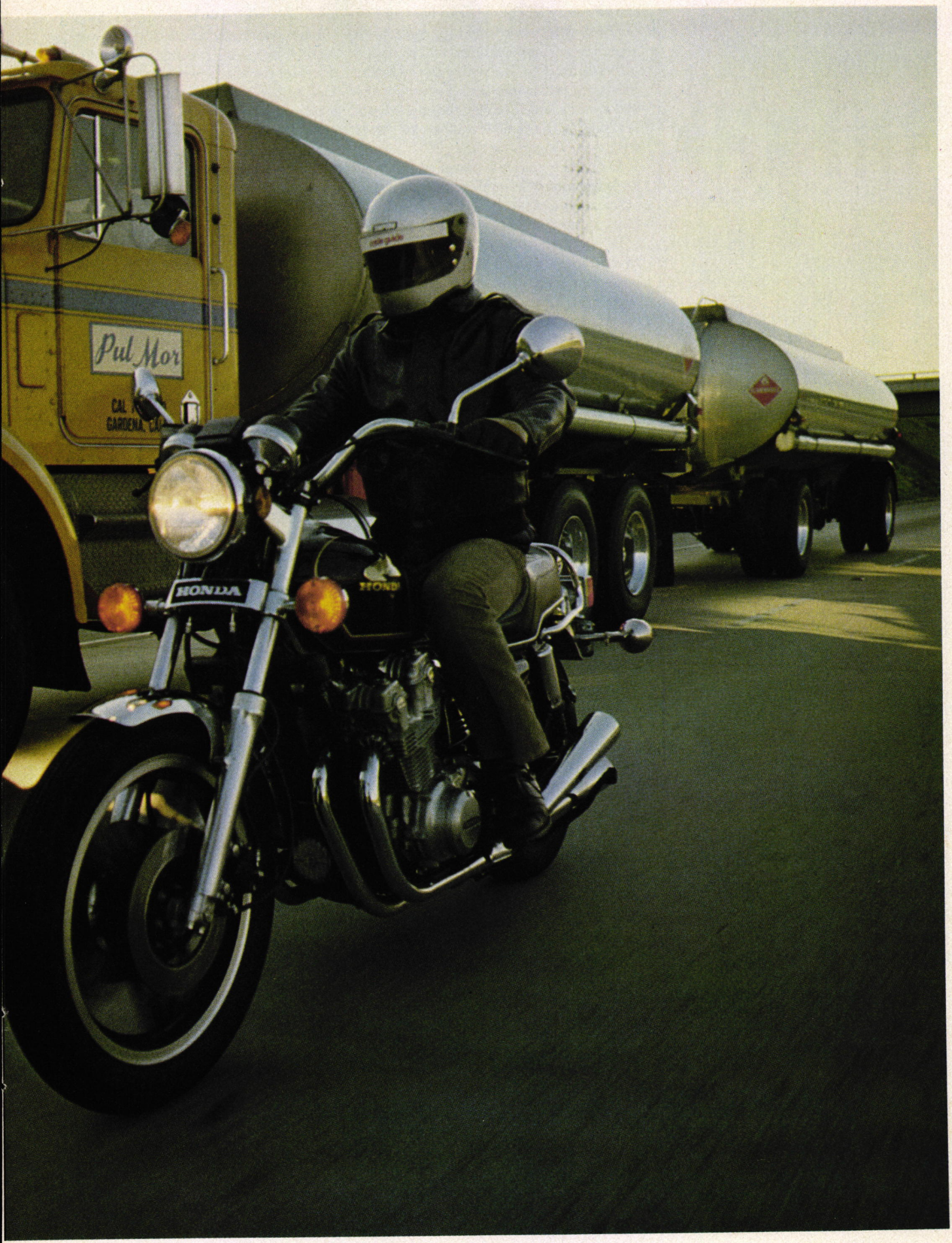

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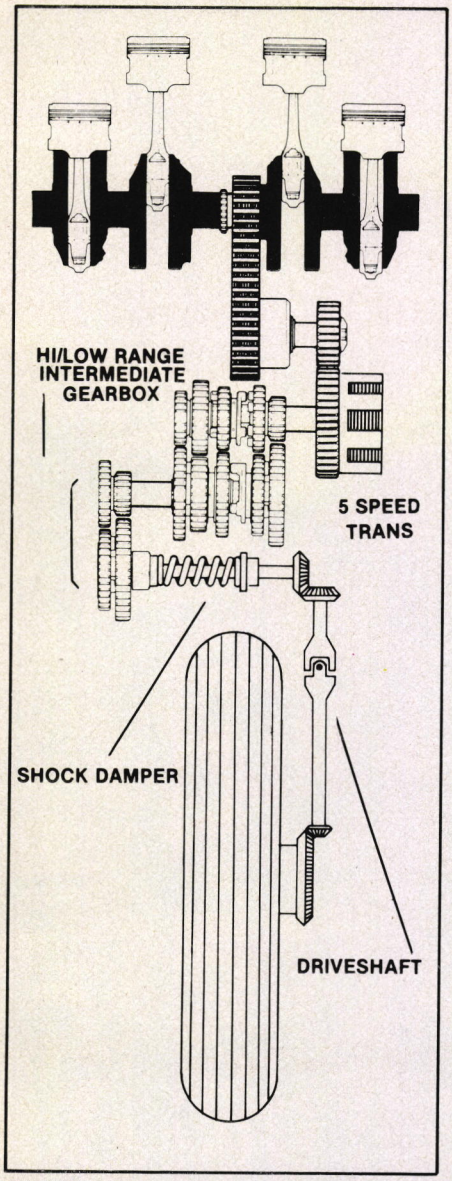
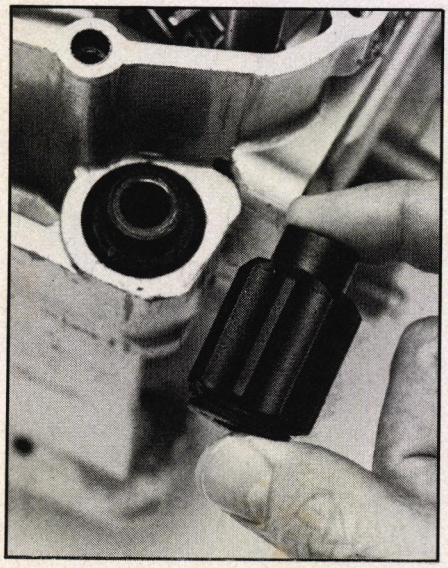


CB900 Custom's powertrain

Charting the monkey-motion.



Rubber cushions for the mounting bolts

Taking the sting out of the horsepower.

the 900 and 750 Fours began life together on the drawing board and they continue to share many components as well as design philosophy. The four-valve-per-cylinder heads are nearly identical. Except for the 900 motor's longer stroke, the crankshafts are built to the same specifications. More flywheel weight on the 900's crank smooths the engine's power pulses and gives the motor the mid-range punch that other Honda street bike engines lack, although the 900 still has a light-flywheel feel. Another important difference between the 900 and 750 engines is that the bigger motor has a lower (numerically) primary ratio, a logical move considering that it makes so much more horsepower.

Most of the advantage the 900 engine has over the 750 in terms of rear-wheel horsepower comes from a displacement increase of 153cc. The only external evidence of the 7mm stroke stretch and 2.5mm larger bore size, however, is a half-inch increase in engine height and the addition of one more cooling fin on the cylinder block. Intake valves 1mm larger than the 750's and exhaust valves 0.5mm larger do their part for power, too, passing more fuel into the cylinders from 2mm larger Keihin CV carbs (with an accelerator pump) and assisted by camshafts with five degrees more duration and 0.5mm more lift. So far, these specifications resemble those of the Euro-900 engine, but in order to bolster performance between 5500 rpm to 7500 rpm, the Custom's motor has special exhaust tuning. In sum, the kind of horsepower the 900 cranks out feels very different from the 750's, for aside from a small lean spot around 5000 rpm, the engine produces a smooth rush of dynamo-like power, almost like an XS Eleven motor. As a result, you don't have to resort to the gearbox as often as you do while riding the 750.

Though American riders have long asked for it, Honda's engineers have opposed mating a transverse engine with shaft drive. The mechanical monkey-motion required to direct the power from a horizontal to a longitudinal plane offends them with its power-robbing inefficiency. That's why the GL-1100 and CX500 crankshafts spin parallel to their driveshafts. The special requirements of the 900C broke down the engineers' resistance, however, partially because pure efficiency wasn't an issue with this motorcycle. Besides, they saw an opportunity for innovation in the problems associated with the driveshaft's installation.

Rubber motor mounts were the first wrinkle Honda engineers elected to throw into the Custom's powertrain, insulating the rider from the buzz of the 16-valve engine. The engineers had rejected this anti-vibration strategy before the 900C was designed; but since the shaft drive absorbs much of the shock in power transmission, the rubber bushings wouldn't have to be made so hard to resist deterioration that their insulation qualities would be seriously compromised.

The second technological wrinkle came in the installation of the shaft drive itself. All of Honda's shaft-drive tooling requires a power take-off on the right side of the engine. The 900's take-off lies on the left side, however, requiring some sort of a crossover shaft behind the transmission to channel the power to the right side. Surveys of Gold Wing owners also played a part in the 900's engineering battle plan, for they revealed time and again the desire for optional final-drive ratios. With the 900C, Honda engineers decided they had the opportunity to provide touring riders with their heart's desire. So with the aid of technological trickle-down from the CT90, four gears were fitted to transmit the power from the transmission to the crossover shaft. By operating an external rocker lever, you have the choice of two different drive ratios with a difference of 12 percent. In effect, Honda gives you 10 different transmission ratios. (See page 49 for an explanation of the sub-transmission.)

More than just 10 gear ratios are needed to dress out a touring bike though, so the Custom wears the suspension developed concurrently for the Gold Wing. Only softer springs fore and aft were necessary to adapt the air-spring units to the 900. Anti-stiction bushings all-around insure superior compliance to road imperfections, while the rear shocks' four-stage variable rebound damping further takes the thump out of bumps.

Once you review the specifications, you notice that the 900C points in a lot of different directions, usually a tell-tale of confusion. Yet the Custom's multi-purpose nature makes it an amusing conspirator for good times on the road.

The riding position alone illustrates how well the 900 compromises its different roles. Certainly, the position you assume at the Custom's controls is American, as the sweep of the handlebar emphasizes, but there are important differences. In the first place, the footpegs are fairly high to provide ground clearance during your sporting adventures, an important feature on a motorcycle as softly suspended as the Custom. The 900's bar has a stylish sweep, yet the grips are located not far from where they'd be with a standard CB750F bar. The relationship of seat, bar and pegs also encourages a hunched riding posture that

manages to be less fatiguing during freeway cruising than an upright one. And the low, stepped seat, meant to provide a fashionable look as well as a seat height suitable for the substantial number of women riding motorcycles these days, supports you very well. Among 1980's offerings in the custom category, in fact, the 900C's saddle actually earns the No. 1 position, despite the fact that like all bucket seats it restricts movement.

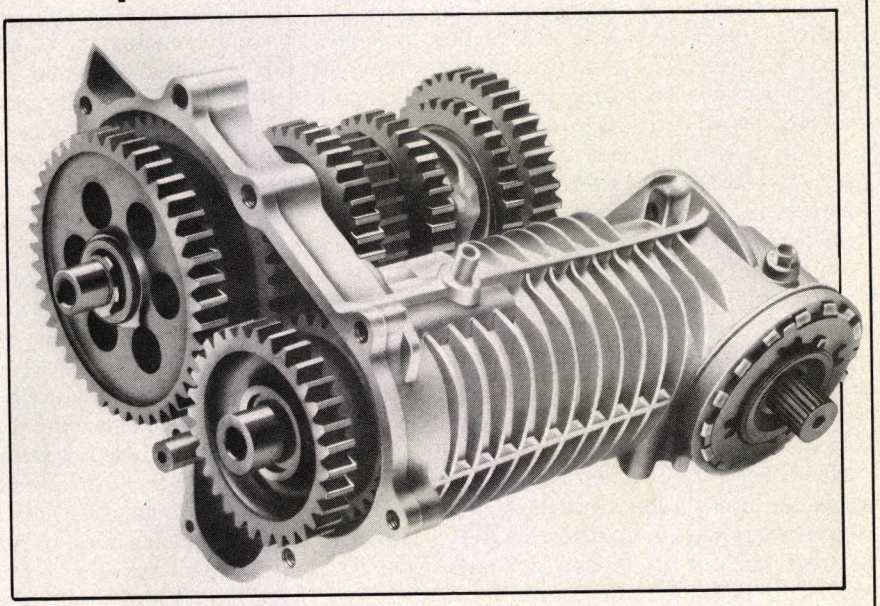
This multi-purpose theme is played out to good effect by the chassis as well as the riding position. A 63.2-inch wheelbase and a 31.1-inch seat height do their best to make you feel as if you're commanding a semi, of course, and the turn signals *cum* running lights reinforce the imagery. It certainly doesn't take much effort to keep the Custom pointed toward the Interstates' vanishing point—although the tires pick up longitudinal ridges in the pavement. And when the suspension's air pressure is set to the bottom of its adjustability range—11 psi in front and 28 psi in the rear—the 900C has a comfort quotient superior to that of an XS Eleven Special or any American-style motorcycle. The rubber-mounted engine even competes on an even footing with Yamaha's King Smoothie in this respect.

Yet despite its nearly two yards of wheelbase, 90 inches of overall length and steering geometry far slower than that of any CB750F—29 degrees of steering head angle and a whopping 4.9 inches of trail—the Custom hammers through the corners gracefully once the suspension air pressure is raised to 16 psi in the front and 64 psi in the rear. The Custom might be long, but the wheels stay in place and there's plenty of ground clearance, which means reassuring stability in fast bends.

Around town, the Custom proves astonishingly willing as well. You might be hauling 588 pounds of lard around before you gas up, and the 63 inches of wheelbase might inspire you to hang a sign that says "Caution, This Vehicle Makes Wide Turns" above the taillight, but the 900C slaloms in close quarters effectively. The handlebar earns high marks here, as does the engine's flexible powerband.

The Custom does have flaws, of course, but they don't lie in its touring payload, for it has 482 pounds of carrying capacity and it will slip right into Honda's slick Interstate fairing. Instead, the runabout mode is what makes the 900 get on your nerves, for the rear end jacks up and down with acceleration and deceleration as annoyingly as any bike since the Yamaha XS750. Gas it hard and the rear tire chirps as the suspension rises; brake hard and the

Ten Speeds, No Pedaling

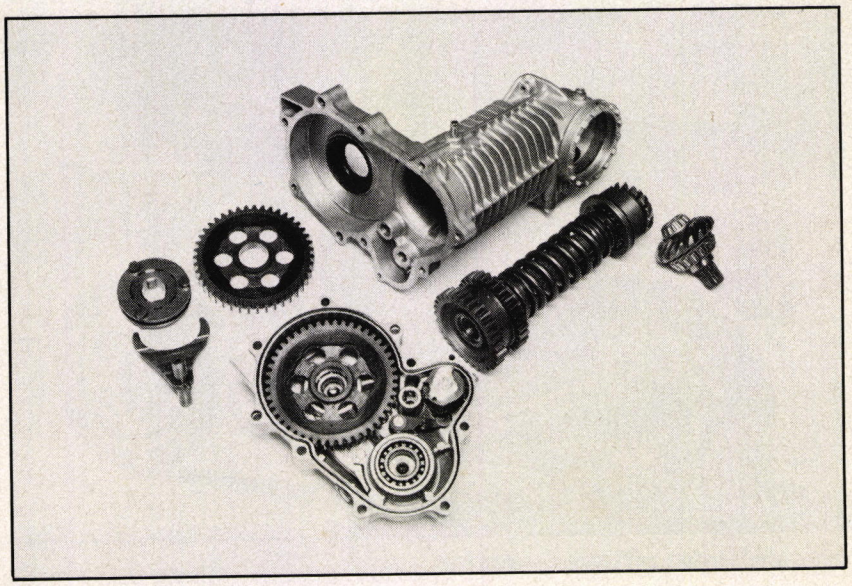


• No magic was required to transform the CB900's conventional five-speed transmission into the largest collection of ratios this side of a GP 125cc roadracer. Just the opposite, in fact. Honda's CT-series trailbikes have long had dual-range transmissions based on the same concept.

Two parallel gearsets spin in a bath of gear oil to the left of the conventional transmission. The large, heavy gears in the fore part of the case spin on the output shaft from the conventional gearbox. The smaller aft gears turn on a jackshaft fitted with a spring-loaded shock damper that transfers power to the right side of the engine, turning the driveshaft. A rocker-type shift lever selects either combination of gearsets through a conventional shifting fork.

The lower-speed gearset has a ratio of 0.721 and the taller one 0.638. Prototypes of the 900C, however, had a ratio of 0.652 for the higher-speed ratio because Honda engineers wanted to insure that the bike could attain an emergency speed of 100 mph even with a fairing attached, for the 10-speed couldn't compromise performance. Complaints about the insignificant reduction in cruising rpm in high gear convinced the engineers to return to the drawing board, though. Further exhaust tuning kept the 100-mph goal within reach and permitted the installation of a lower numerical ratio. Now there's about a 500-rpm difference between the two ratios at 60 mph. That works out to more than a seven-percent improvement in fuel economy according to Honda's testing, and about 0.25 seconds in the quarter-mile according to *CG*'s testing.

We'll have to wait to see if the 10-speed gearbox will be as useful as Honda hopes, but in the meantime, it's sure to be a hit at truck stops. —*Michael Jordan*



Continued

rear wheel chirps and chatters as the suspension settles.

Syoichiro Irimajiri, Director of Honda R&D, acknowledges the problem, although he thinks the 900C is better in this respect than the XS Eleven. Apparently, the sub-transmission behind the 900 engine requires an extraordinarily long distance from steering head to swingarm pivot. And the short swingarm that results interacts with soft suspension rates, shock installation angles, driveline lash and the torque of the 900 engine to upset the rear end's equilibrium. It's probably not enough to dissuade you from plunking your money down for a Custom, but it sure makes the bike look bad compared to shaft-drive offerings from both Suzuki and Kawasaki.

Honda hopes the 10-speed transmission will be the ultimate clincher in its attempt to woo buyers away from competing shafties from Yamaha, Suzuki and Kawasaki. Indeed, it probably will. According to Honda's calculations, fuel mileage for the thirsty 900 engine is increased more than seven percent once high gear has been engaged. Low gear helps the light-flywheel motor get away from stoplights with little drama. You can even split-shift for 10-gear acceleration, alternating between the long-throw (and imprecise) transmission shifter and the clunky heel-and-toe lever for the sub-transmission.

Even so, the 10-speed bordered on the redundant for most of CG's test riders. It rattled audibly while pulling away from stoplights and usually left you in doubt about whether you'd accidentally shifted into neutral or not. Around town, the flexibility of a tall first gear proved more useful than the acceleration potential of a short one. The one benefit everyone cared about was the 500-rpm reduction in cruising rpm—but that could easily have been accomplished with a six-speed transmission. In short, marketing surveys may reveal a desire for a transmission like this, but we were unable to justify its presence in relation to the way the bike actually functioned.

For all the narrow-eyed skepticism aroused by the Custom's 10-speed transmission, however, you can't deny the bike has a certain appeal. Despite its truck-like dimensions, it adapts to a multitude of roles with ease. In comparison, other custom-styled bikes restrict themselves to a small corner of motorcycle experience. For a Custom rider, for example, a road map holds nothing but opportunities, because the 900 delivers equal amounts of grins whether you're beating a path along the Interstate or wandering along back roads. Sure, when you're really honking with the 900, whether you're hauling a passenger or just hauling ass, it's easy to slip into truck-think and see yourself as the champion of long distances. With shaft drive, sophisticated suspension and an enormous wheelbase—not to mention 588 pounds—the Custom certainly fits the stereotype. But as bobtail rigs from Modesto to Ontario International Speedway have proven, your own personal Overland Express can be as ready for cruising or speed thrills as you are. The CB900C is, but you just have to set your mind to take advantage of it. •

Speed-styled Custom with long-distance legs

Touring American highways with machinery calibrated for American tastes.

Ride Review

• I'm not a moderate person. When I do something, be it good, bad or just plain stupid, it's either all the way or not at all. And that's why the 900 Custom, the King Kong Kompromise Kruiser, just isn't my kind of bike. Honda tried to build a double-cam smorgasbord here, cramming a little something for everyone into the 900, but in doing so left out the kinds of things that appeal to me. Things that have nothing to do with compromise and everything to do with *un*-compromised power, handling and personality. Okay, so the 900 rides like a Cadillac and has a two-speed sub-transmission. Fine. But I'm not going to live with a strange-looking 588-pound blimpbike just to get a good ride; and you and I both know that a 900cc, 12.4-second motorcycle needs 10 speeds about as much as I need 20 noses. So thanks anyway, Honda, but I think I'll just pass on this one. — *Paul Dean*

• Whenever I look at the CB900 I think of dinosaurs fighting for survival in prehistoric times. Although once dominant, their sheer size finally overcame them and extinction was just around the corner.

Likewise, the 900 strikes me as a large animal that while strong and remarkably agile, will soon follow in the path of those prehistoric creatures. Hopefully its passing will mark a return to a more sensible line of motorcycles where sheer size is not a prime factor.

Although the concept of a large motor with shaft drive powering a street cruiser is proven, Honda seems to have gone to unacceptable lengths to fit the concept. Simply bolting a shaft drive onto the 900F has made the CB900 one of the longest and heaviest dinosaurs on the road; and I will not lament its extinction.

—*David Dewhurst*

• You can deny till you're blue in the face that the CB900C is overweight, but the evidence is right there in avoirdupois. By itself, the fact that the Custom tilts the scale doesn't detune my interest, though. It would, if the 900 wallowed around and generally made fat-bike moves in the corners. But fortunately, the same clear thinking that went into the GL-1100's suspension lets the 900C snake around nicely for a big bike. The Custom's subjective *feel* is more like a CB750K's than anything else—without the K's full-time case of nerves.

But if I had been hunched over a drawing board, planning to lure XS1100 Special riders from their Yamahas, I'd have gone a step beyond function and dialed in some smooth uptown styling. The 900C looks more like it was dressed by committee. And bowing to fashion, I'll take my business elsewhere. —*Larry Works*

Honda CB900C

SPECIFICATIONS:

Importer: American Honda Motor Co.
100 W. Alondra Boulevard
Gardena, California 90247
CATEGORY: street
SUGGESTED RETAIL PRICE: $3349

ENGINE

Type ..... four-stroke transverse vertical four
Valve arrangement ..... double overhead camshafts, four valves per cylinder
Bore and stroke ..... 64.5mm x 69.0mm
Displacement 901.8cc
Compression ratio 8.8:1
Carburetion ..... four 32mm Keihin constant-velocity, one accelerator pump
Air filter ..... disposable paper element
Lubrication ..... wet sump
Starting system ..... electric only
Ignition ..... transistorized breakerless; dual electronic pickup/dual coil
Charging system ..... 12-volt; alternator, solid-stage regulator/rectifier

DRIVETRAIN

Primary drive ..... Hy-vo chain
Primary drive ratio 1.0:1
Clutch ..... wet, mutli-plate
Secondary drive ..... straight-cut gears
Secondary drive ratio 2.04:1
Sub-transmission ratio 1 ..... 0.721:1
Sub-transmission ratio 2 ..... 0.638:1
Jackshaft-to-driveshaft drive ..... spiral-bevel gears
Jackshaft-to-driveshaft ratio 1.20:1
Driveshaft-to-rear-wheel drive ..... spiral-bevel gears
Driveshaft-to-rear-wheel ratio 3.091:1

Gear	Internal gear ratio	Overall gear ratio		MPH per 1000 RPM	
		Sub 1	Sub 2	Sub 1	Sub 2
I	2.38	12.98	11.49	5.9	6.3
II	1.79	9.77	8.64	7.4	8.4
III	1.39	7.58	6.71	9.6	10.8
IV	1.16	6.33	5.60	11.4	12.9
V	0.96	5.24	4.63	13.8	15.6

SUSPENSION/WHEEL TRAVEL, IN.

Front ..... air-spring, 37mm stanchion tube diameter/6.3 in. (160mm)
Rear ..... air-spring/4.3 in. (109mm)

BRAKES

Front ..... dual single-action hydraulic calipers, dual 10.8-in. (275mm) discs
Rear ..... single dual-action hydraulic caliper, 11.8-in. (300mm) disc

TIRES

Front ..... 110/90-19 Dunlop Gold Seal F11 62H
Rear ..... 130/90-16 Dunlop Gold Seal K127 67H

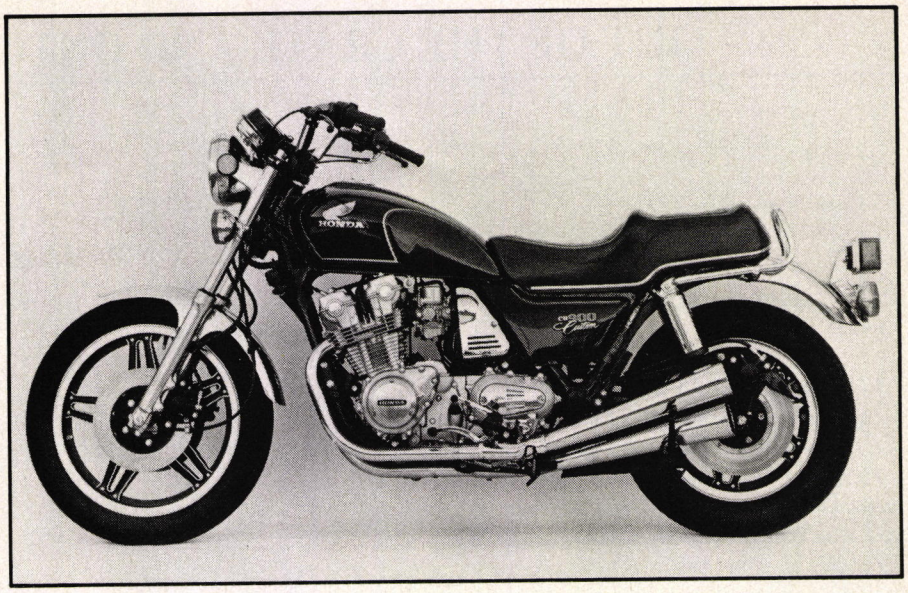
DIMENSIONS AND CAPACITIES

Weight ..... 588 lbs. (266.7kg)
Weight distribution ..... 46.1% front, 53.9% rear
Gross vehicle weight rating ..... 1070 lbs. (485.4kg)
Wheel base ..... 63.2 to (160.5cm)
Seat height ..... 31.1 in. (790mm)
Handlebar width ..... 31.3 in. (795mm)
Footpeg height ..... 13.5 in. (343mm)
Ground clearance .... 6.8 in. (172mm), at exhaust pipe clamp
Steering head angle ..... 29.0 degrees from vertical
Front wheel trail ..... 4.9 in. (124mm)
Frame ..... tubular mild steel, double front downtubes
Oil capacity ..... 4.7 qt. (4.5/)
Fuel tank ..... steel, 4.4 gal. (16.6/), including 1.0 gal. (3.9/) reserve
Instrumentation ..tachometer, speedometer, odometer, tripmeter resettable to zero

PERFORMANCE

Fuel consumption ..... 37 to 44 mpg (15.7 to 18.6 km/l)
Range, maximum ..... 163 to 194 miles (260 to 309km)
Range, reserve only ..... 37 to 44 miles (61 to 76km)
Speedometer error, 30 mph indicated ..... 28 mph actual
Speedometer error, 60 mph indicated ..... 60 mph actual
Best ¼-mile acceleration
Sub 1: ..... 12.44 sec., 107.9 mph (173.6 kph)
Sub 2: ..... 12.69 sec., 105.3 mph (168.9 kph)
Top speed (calculated)
Sub 1: ..... 124 mph (200 kph)
Sub 2: ..... 132 mph (212 kph)
Stopping distance from 30 mph ..... 33 ft. (10.0m)
Stopping distance from 60 mph ..... 155 ft. (47.2m)

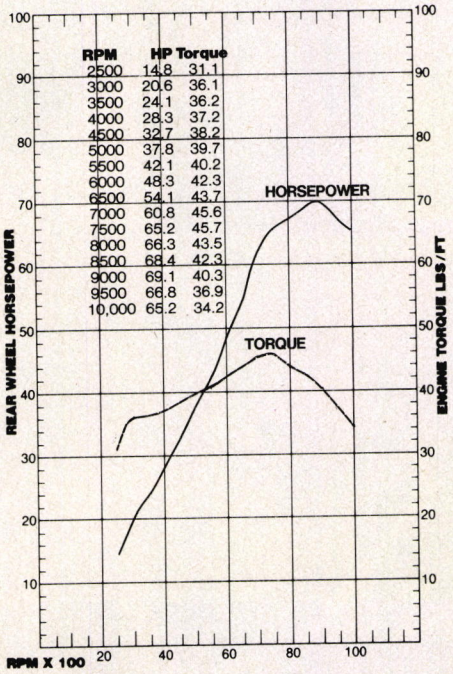
All weights and measurements are taken with machine unladen and fuel tank empty.

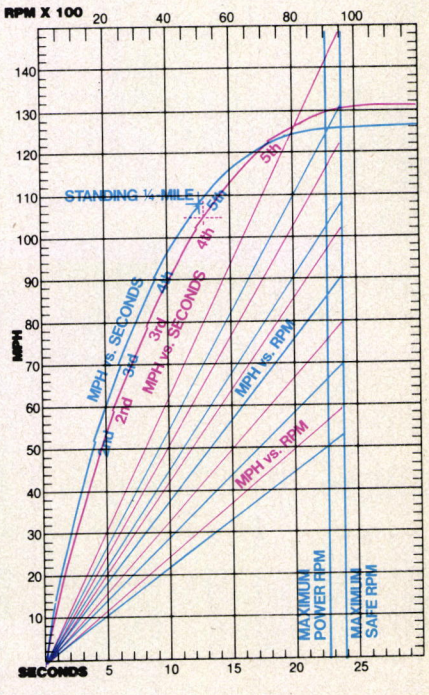


COMPARATIVE TEST DATA:

Make	Quarter-Mile, sec/mph	Top Speed, mph	Weight, lbs	Stopping Distance From 60mph, ft.
Honda CB900C	12.44/107.9	132	588	155
Yamaha XS1100SG	11.94/112.6	135	572	129
Yamaha XS850LG	13.10/101.7	116	548	144
Suzuki GS850N	12.81/104.0	116	566	153
Kawasaki KZ1000 ST	12.23/110.3	132	574	130
Suzuki GS1000LN	12.39/108.4	130	526	129

PERFORMANCE:





OUT OF THE CRATE AND ONTO THE TRACK:

Box Stock is Boss

You too can be a roadracing hero.

BY DAIN GINGERELLI

• Let's skip the BS—you want to be a motorcycle roadracer, right? Now that it's on the table we can shoot from the hip and understand each other. You *can* be a roadracer. Don't worry about expense, because you won't have to buy a $5500 Yamaha TZ250G. In fact, the machine you race may be the street bike you ride to work every day, and it's resting on its centerstand in the garage right now. You're going Box Stock roadracing.

Before you giggle disdainfully under your full-coverage helmet, watch just one Box Stock race from trackside. At first it may not seem exciting, because you won't be blasted by a bazillion ear-shattering decibels since Box Stock bikes are required to have DOT-legal mufflers. The fact that the rules don't allow engine modifications, and the fact that for the most part the bikes must conform to manufacturer's specifications, sometimes makes BS racing even seem unattractive. But watch a race and you'll see men straining with every bit of talent to balance their street bikes on the glazed-blue racing line around the track. You'll see bikes two or three abreast in the turns, each rider trying to get the edge on his competition. That's because it takes riding talent—not tuning talent—to win Box Stock. And this equalizer is going to be the ticket to get you and your street bike on the racetrack and, what's more, make you competitive.

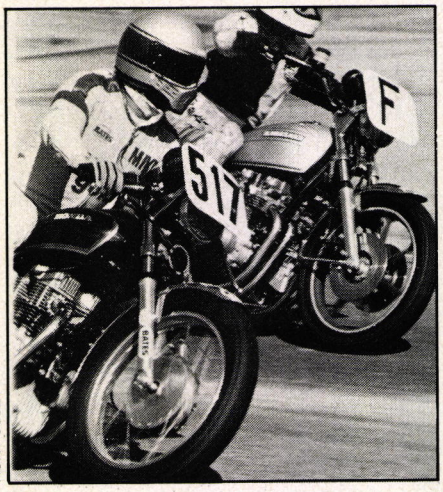
That's the best thing about Box Stock racing: You can't win with just a fat wallet. Of course, you need to be good with the throttle, because before the race is over, you'll have beat the competition with drafting, late-braking, and ballsy muffler-dragging in the corners. You won't be able to do it on the straightaway by using a horsepower advantage, though, because the engine must be *box stock*. So if you think you've got the talent to be a racer, Box Stock is the way to find out.

Cycle Guide put its riding talents on the line last season, venturing into the 410cc Box Stock class. The *Cycle Guide* effort became known as Project Boss Stock, and included a three-bike stable consisting of a Yamaha RD400F Daytona Special, Honda CB400 Type I Hawk, and a Suzuki GS400. Our riders were all staff members, including Editor Michael Jordan, Managing Editor Larry Works and myself. We didn't set out to capture a class championship, but instead we wanted to find out for ourselves if all the talk about Box Stock racing being a rider's class were true. The project also

BRENT CRAIG

Boss Stock Racing Team

Reviewing the troops before battle.



RON HUSSEY

Jordan takes the outside line

Just another BS-line in passing.

served as a basis for stories in "Sport Lines" on how to race, because the lessons we learned on the track could be used as shortcuts to speed for your own racing.

We selected the 410 class for a variety of reasons, the foremost being cost. We looked at the project the way you might, and felt the approximately $1500 price tag for a 400-class motorcycle would seem attractive to the first-time racer. Another important determining factor when we strapped our number plates to these twin-cylinder speedsters was what we call the Fright Factor.

Speed is the common denominator of the Fright Factor—the faster a motorcycle is capable of going, the more fear it injects into your nervous system. Since we weren't out to set the roadracing world ablaze, we decided it would be more fun to scrape mufflers on 100-mph racers than to risk scraping other pieces of hardware and leather aboard full-faired GP bikes. So we took our 40-horsepower racers and went racing, thinking less about scaring ourselves than about having a good time. The Fright Factor is so reduced by these 410-class bikes that you can't help having fun,

Sport View: From the pulpit of born-again racing

• I used to think Box Stock racing was a joke. The bikes were slow, they didn't sound like real racers, and worst of all, you couldn't modify them to be suitable for the racetrack. Box Stock, to me, was the dead end of closed-circuit racing.

I felt that way in 1968 when I first started racing, and I felt that way until I temporarily quit in 1978. Oddly, 1978 was a pivotal year in my low-profile career as a production racer. After 10 years of competing in the 200cc, 250cc, and 410cc production classes (production rules in the AFM and ARRA allow engine and certain chassis modifications), I got tired of trading green dollars for grey pistons and warm, comfortable nights stretched out in front of the television for cold, nocturnal sessions in the garage helping my friend and tuner John Lassak perform mechano-surgery to a Yamaha twin. So I put a pricetag on my RD350 as the '78 season neared an end.

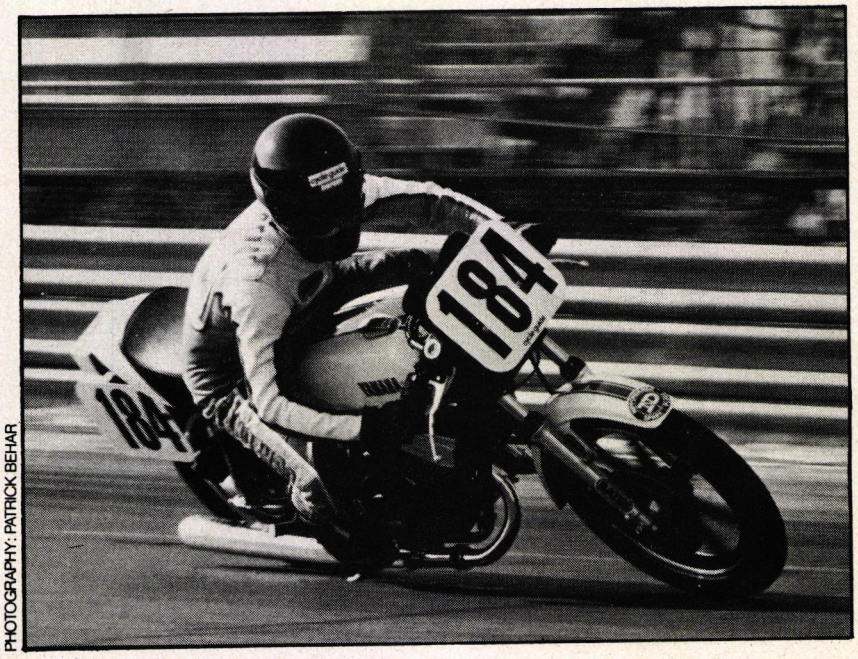
That was also the year a friend offered me a one-time ride on a 410cc-class Box Stocker. Just for jollies I accepted. While my RD350 sat in the pits with a For-Sale sign draped over the number plate, I scooted around Riverside on a slow-but-fun Suzuki GS400. That Sunday I got hooked on Box Stock racing. The hook extended into the pits, too, since the only pre-race preparation involved included a plug change and adding gas to the tank.

I returned to *Cycle Guide* with a proposal to form a Box Stock race team. I reasoned that if a fairly successful production racer like myself could find fun in Box Stock, why wouldn't other people be willing to tuck behind a number plate? I was a born-again racer, ready to spread the word.

As the CG effort progressed into the 1979 season, I learned more and more about racing. One of the biggest lessons BS teaches is how to lose. But don't take me for a second-place finisher; I never entered a race thinking about losing. In Box Stock, though, the competition is so close that second—or even further down the ladder—may be all you can muster in an eight-lap sprint race. Losing is never easy, but what makes it a little more palatable in BS than other classes is the *way* you're outdistanced to the checkered flag; it's the rider with the most talent—not the most horsepower—who wins. Consequently, when you cross the line first, that moment of victory is more rewarding. Winning *and* losing mean more to the rider in Box Stock than any other class of motorcycle roadracing. The only person you thank is yourself; the tuner didn't do it.

My perspective about Box Stock racing has changed 180 degrees. It's no longer viewed as a class for beginners to grasp the fundamentals of roadracing before graduating to Production or Grand Prix. Now I view it as the eight-lap equalizer between the fat-cat with the diamond-studded wallet and the kid who works in a motorcycle service department, scrounging discarded parts from customer bikes for his racer. In Box Stock, there aren't such extremes. You show up on Sunday with your near-bone stock bike, then race. And the best man wins.

—Dain Gingerelli



PHOTOGRAPHY: PATRICK BEHAR

Continued

Sport View: Track time translation

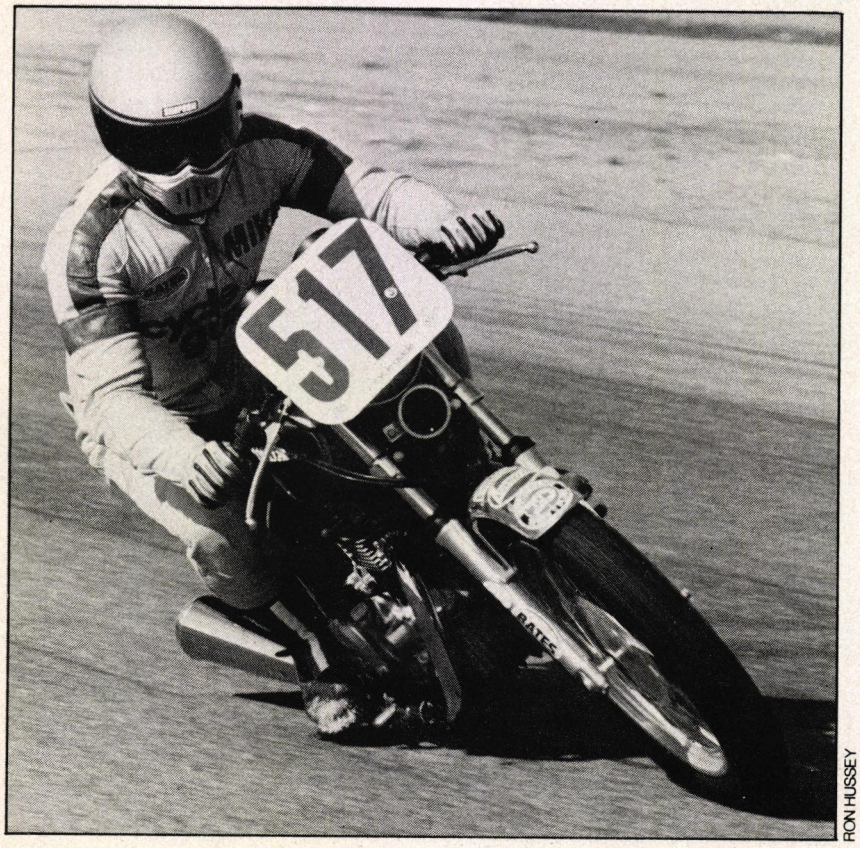
• Listen, I know you're supposed to slap number plates on your standslammer and get yourself to the racetrack precisely because grinding footpegs on the street qualifies you as a certified bull-goose loony. But one of the best reasons I had for racing was that I expected my street-riding skills to benefit. It didn't take more than my first rider's school to prove me right. And just as when I piddled around with showroom stock car racing, I found that my skills improved in direct proportion to the amount of time I spent on the track.

Scratched footpegs and tires scuffed all the way across the tread are two of the things by which fast riders are judged, and both fell within my grasp quickly. More than a quest for status spurred me on, though. I reckon that restricting yourself to the center two-thirds of the tire tread means you're unable to extract that last bit of maneuvering capability from your bike in an emergency situation. To speak plainly, the further you can lean your bike over without losing control, the quicker you can turn out of harm's way on the street.

Naturally, racing speeds make me thirst for more speed on the street, at least in the corners anyway. But when I whistle into the turns these days, I'm far safer because of my racing experience. The late-apex cornering technique that comes so naturally on the track helps me negotiate the twisties safely. I brake and stay to the outside of the corner until I can almost see around it, then I flop the bike over onto its gas cap and get on the throttle. No longer do I find myself beginning my cornering arc too soon, which invariably sets you up for an exit that drifts either off the road or into oncoming traffic. It takes a little confidence to get into corners this way, but I'm sure it's safer.

My street riding reflects more than safety after my go-around in Boss Stock. Racing fosters a renewed kinesthetic sensitivity to vehicle dynamics. And it carries over into the time I spend with standslammers on the street. I'm more aware of what the bike is doing beneath me now, as if a new data bank had been opened in my navigational system. This sensitivity deepens my involvement with the task of operating the motorcycle.

I guess that draws the bottom line to why I think nearly every rider should try road-racing. As far as I'm concerned, racing represents riding time brimful of action, adventure and speed thrills. That's why I'm going to continue racing. Yet the tingling in your senses that begins when you take the track carries over into your street riding. So these days, I can appreciate the difference between just sitting on a motorcycle and really riding it. —*Michael Jordan*



RON HUSSEY

even while dicing in a pack.

None of the fun is drained by motorcycle preparation either, as it takes only about a Saturday afternoon to set a bike up for Box Stock racing. A first-time racer can gather parts during the week, spend Saturday prepping the bike, then pack up on Sunday morning for his first race.

Following what the American Federation of Motorcyclists allows, we equipped all the bikes with low-slung handlebars. The RD400F had a set from Dick's Cycle West, while the four-strokers used Graham Sheet Metal tubing. The Cycle West bars are a little lower at the grips, allowing you to tuck in more to cheat the wind on the straights for top speed.

Tire selection for Box Stock is limited to DOT-approved rubber. We tried Dunlop K81R tires on the Yamaha and Honda—the R designates a racing compound, although the tread pattern is DOT-approved. We found that size 4.10—front and rear—worked best on both bikes, and we set tire pressure at 28 psi front and 31 psi rear. The Suzuki used Michelins, a 3.50H18 S41 front, 4.10H18 M45 rear. Like the Dunlops, the Michelins had a race compound, indicated by the PZ2 rating. We set pressure 29 front, 30 rear.

Although tire selection on these bikes is generally subjective, we all agreed the Dunlops are more suitable for Box Stock riding styles. The K81R drifts around high-speed turns, while the Michelins grip more tenaciously. You might think more grip would be the answer, but it just overloaded the suspension (especially the softly-damped forks), making the tires chatter. Furthering our support for the Dunlops, our RD400F holds unofficial track records for Box Stock at Riverside, Willow Springs, and the Las Vegas Speedrome.

According to AFM rules, the only modifications allowed to the suspension include the replacement of stock shocks, and substituting the stock fork oil with a heavier weight oil in order to firm the damping a little. We added about 15cc more oil to each fork leg of the Yamaha and Suzuki to increase spring-rate progression, too. The Honda fork was left stock. A pair of S&W shocks and springs with an 80-pound rate were mounted on the Yamaha, while the Suzuki used Mulholland shocks with the same spring rate. Again, the Honda was left stock, mainly because aftermarket shock manufacturers find the clevis pin at the lower mount difficult to duplicate, and we couldn't find a pair to fit. Even so, the Hawk exhibited better handling manners in stock form than did the other two bikes after a suspension tune-up. A similar

Hawk ridden by Perry Stein even won three races during the year.

After performing safety modifications such as wiring the oil drain plug, we installed Nippondenso racing spark plugs (W31-ESGU for the RD and GS, X27-ESGU for the Hawk) to cope with the high cylinder temperatures produced by running at redline for 25 minutes. The four-stroke engines were kept lubricated with Castrol 40W per Castrol's recommendation and the Yamaha used Yamalube R. Finally, we saddled up for a season of racing in AFM and American Road Racing Association events.

Using the tracks in Southern California as a guide, we'll go on record rating the bikes this way: The Daytona to win, the Hawk to place, the Suzuki to show. In addition, each bike's best race finish reflects its overall track rating by us, too.

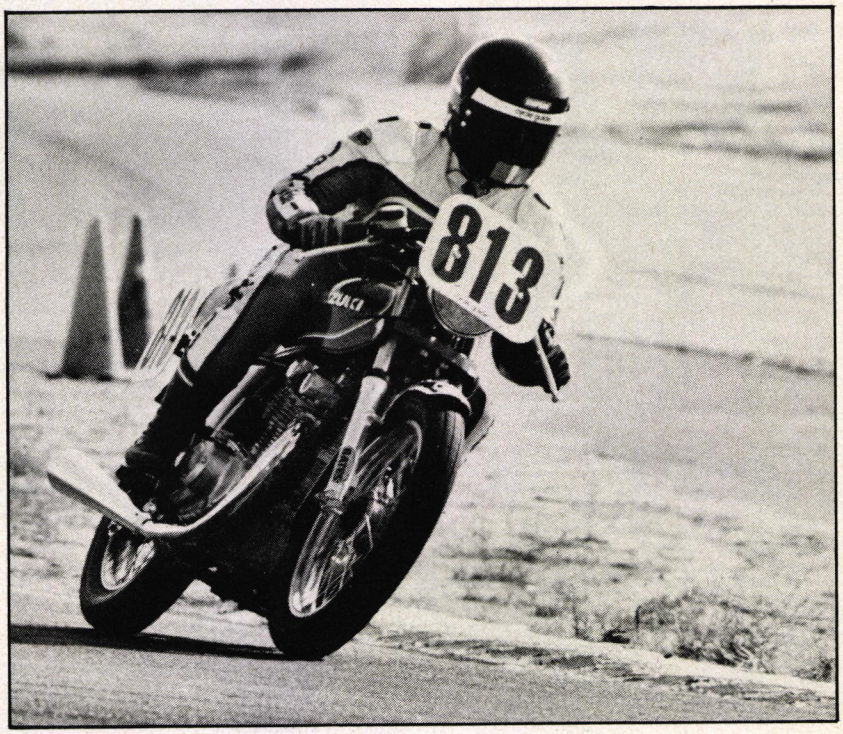
Our Yamaha had a record of four wins in six Box Stock starts. Its only defeats were two second place finishes a few bike lengths behind other RD400s. In support of our claim for the RD's prowess, AFM 410-class champion Larry Theobald won using a stable of two RD400s from his T&O Yamaha pits—he chose from his 400D model and the Daytona. The second high-point man, Mark Engles (Berkeley Yamaha) rode a Daytona, as did the fourth and fifth place point riders, Scott Moore (Palo Alto Yamaha) and myself.

Perry Stein's Honda was the only four-stroke winner the entire year, and the sole cam-and-valve engine in the final top five. The Hawk, we feel, is an excellent bike for a beginning rider to learn on, and it is still a competitive motorcycle for 410 Box Stock. Its weakness is acceleration, and pitted against the Yamaha, it will have a difficult time establishing a lead on the tracks that we competed on in California.

Suzuki-mounted riders won't concern themselves with any of this. The bike is far outclassed by the other two. Our GS once managed a third place finish, but only because the field was drained of the faster bikes and our rider overextended himself through the corners.

Box Stock racing is more than just winning and losing, though. It's a chance to get to the racetrack and rub shoulders with friends and other racers. And racing one of these non-modified bikes means you won't spend post-practice time changing gearing and trying to decide whether to go up or down on the carburetor main jets. We think Boss Stock has a pronounced Lawn Chair Factor. While those daring young men on the 150-mph TZs—the same guys who laugh at our standslammers—rush through the pits in a frenzy to get ready for

Sport View: Working your way to the head of the class



• My motivation for getting into Box Stock was as persuasive as a blonde's smile and as irresistable as the tides: Get Gingerelli talking about roadracing and it's plain infectious. And when Jordan jumps in, you might as well plan on it.

But despite all the ambient moral support, I started out viewing Project Boss Stock with more than a shade of skepticism. Oh, I was all for riding hell-for-leather without checking my mirrors for flashing lights or straining ahead to spot the station wagon backing into my path, but I wasn't prepared to become a slave to my bike. In my own race equation, three nights a week spent prepping for an hour on the track just doesn't cut it.

But it turned out the other way around, as it happens. Box Stock works out about as close to a free lunch as you're going to find. In fact, beyond the first half day making the standslammers track-legal, my total maintenance time for the rest of the season amounted to less than a few hours of changing plugs, checking tire pressures and lubing chains. All told, I figure I put in about the same effort as if I'd just been riding on the street.

My other big concern when we packed up for the track was the Fright Factor. I'm as fond of Fast as anyone, even of riding fast in groups. But when you hit the first turn in a pack of 25 pumped-up go-fasts, some of them are bound to ride like total strangers. So I started out slow, just testing the water, as it were. And that's when I discovered the true beauty of Box Stock: You don't have to ride flat-out to race. The operative word here is race, not win; but when you're a novice roadracer—as I was at the beginning of last season—you've got to be more concerned with perfecting your skills than in collecting trophies. That's especially true in Box Stock, where the modification restrictions put the emphasis on racing skill, not just fast equipment.

The way I see it, Box Stock is a rolling schoolhouse for racing. Because most riders take the plunge in the Box-Stock class, there's a wide range of talent. So there's always someone to race with; and as you get faster, you promote yourself up to the next level of speed. In time, you work your way up to the front of the pack. Now, I haven't *made* it to the front yet, but this season I shaved 25 seconds off my average lap times. And if my technique improves at even half of last year's rate, I'm going to be collecting my share of wins by the end of this season.

And something else I'll be collecting this season will be track time in a different class. You see, racing a different bike in Superstreet last year showed me that even built-up machines don't require all week to prep—at least not if they're thought out. So I'm also going to race Superstreet this year. But I'm *never* giving up Box Stock.

—Larry Works

Continued

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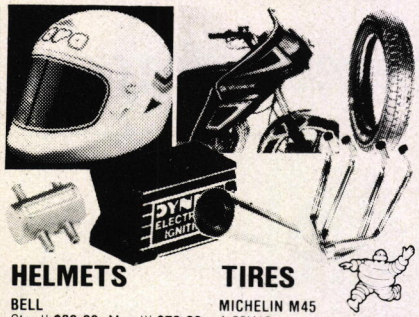

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The Lawn Chair Factor: It's the Boss Stock Racer's Edge

While GP racers catch up on gear changes, we catch up on Sunday comics.

the race, we kick back into our comfortable lawn chairs. Between sips of iced tea, we might lazily glance up to watch some of the pit action, shake our heads and settle back to reading the Sunday comics or chatting with other members of our crew.

But perhaps the most attractive aspect of Box Stock is the track time you can get. According to the rules, a Box Stock bike is legal to compete in BS, Production, Café or Superstreet, and sometimes even GP. That's four races in a single afternoon. The only pre-race prepping you'll do at the track is to make sure the gas tank is topped up and to check tire pressures. That means you can learn to race at four times the rate of the other riders.

The heart of the matter, of course, is whether Box Stock turned out to be the rider's class we expected. Absolutely. Sure, you've got to select the right bike, and know how to give it a tune-up, but beyond that, the difference between winning and losing is all up to you. And even better, 410-class Box Stock is the ideal place to learn, since the financial ante is low and the emphasis is on learning, not posing.

You can take a look at the accompanying Sport Views to find out what each of us got from racing this year, but it's safe to say that we firmly believe there's just one class where you can find out who the real racers are when the checkered flag falls. And it's called Boss Stock. •

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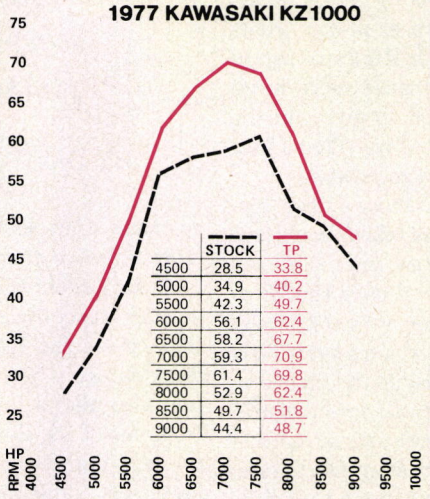

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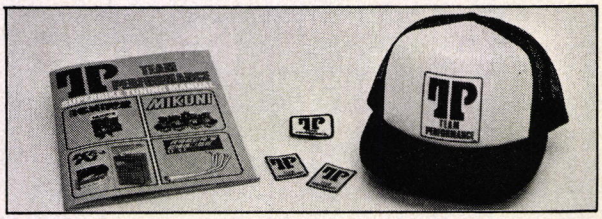

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Can-Am MX-6 400

A motorcycle whose calling card simply reads "Horsepower."

BY DAVID DEWHURST

Enough" is a word not found in The Racer's Dictionary. "More" is, though, especially if you're talking about horsepower. Every serious racer always wants more of that, no matter if he's riding an RM80 or a TZ750, because more brute horsepower is supposed to give you the edge over all the other guys. That's how the bench-racing stories go, at least.

If there's anything to those stories, big-bore Can-Am motocross bikes should win just about every race they enter this year. The new 400cc MX-6 version of that company's Open-class racer even outpowers last year's 370cc MX-5, which let very little get in its path on the way to the first turn. And not only are the peak power figures bigger, they're spread over a wider range of rpm, making the 400 an easier bike to race. So based on a horsepower count, the bright orange Can-Am seems destined to win plenty of gold.

If there is anything certain in motocross, however, it's that horsepower alone does not win races. Those bench-racing stories are quickly proven false if the chassis isn't evenly matched with the motor. And that's the *real* story of the 400: Its case-reed two-stroke is one of the most powerful in all of motocross, but the chassis is not on an equitable level, performance-wise, with the engine. The MX-6's chassis is, in all fairness, perfectly workable; but that's like saying it's just "enough." And to a serious racer, that word does not compute.

The main member of the chassis, the frame, actually is intelligently designed as far as rigidity and strength are concerned. It is of double-downtube construction, with a swingarm-pivot area that is very wide to resist flexing. Adding to that strength are two tubes that angle forward from the pivot to a fat backbone tube. The tube's large diameter makes the backbone very strong, and the tube itself acts as an intake air duct. Using two small airscoops, one at either side of the steering head, the hollow backbone funnels clean, fresh air from just behind the front number plate to a sealed airbox beneath the seat.

This type of intake is not altogether new, for KTM once used an arrangement on its enduro models that drew intake air through holes in the backbone under the gas tank. Can-Am's system seems even more effective than the KTM's, though, for it took about three solid days of riding on fairly dusty tracks before the oiled foam that covers the K&N filter element got dirty enough to warrant cleaning. The system also allows for the induction of air from one of the cleanest areas on the motorcycle, and it has permitted the use of lower seat frame rails. Previous Can-Ams couldn't have lower rails because of the design of the airbox, which drew its incoming air from between the aft end of the seat base and the rear fender.

This new induction system also has helped Can-Am maintain last year's seat height despite this year's longer rear suspension. The top shock mounts were moved forward and upward on the MX-6 and a longer set of shocks bolted in place. The end result is one more inch of wheel travel with no increase in seat height.

More important, however, is that those shocks—S&W freon-charged gas-bag units without reservoirs—are much of the reason why the Can-Am doesn't have chassis-power to match its horsepower. The two-stage spring rate seems all right, but the damping is inconsistent. Most of the time the compression damping seems too stiff, causing the rear wheel to kick up over many different kinds of bumps, and the rebound damping often feels too light. In all, the shocks don't keep the rear wheel on the ground often enough to let the Can-Am reach full effectiveness, be it acceleration, turning or braking.

A serious racer will have to trash-can the S&Ws before his first moto and find a workable alternative. If he has no favorite trick shock of the month, Can-Am can supply him with a very good rear suspension at a reasonable price. For an additional $150, a set of Ohlins reservoir shocks (with springs) can be ordered that can transform rear-wheel behavior from mediocre to excellent. They should be included as standard equipment, though, rather than the low-buck, and even lower-tech S&Ws.

Problems at the Can-Am's front end aren't as serious, but you may need to do some fine-tuning on the new air-spring Marzocchi fork nonetheless. The main improvements to the fork for 1980 are a rubber-mounted handlebar and a larger-diameter damper rod with reduced compression damping. Both changes are aimed at reducing the harshness that has typified previous Marzocchis. But while the new fork is a little better, it's still not comparable to most of the really good front suspensions that are standard these days. The fork still feels harsh when it hits things at full extension, indicating that either there is too little slider/tube overlap to prevent momentary binding or else too much compression damping at the very beginning of the stroke. The fork also seems to have a bit too much preload so that altogether, hitting an abrupt bump with the front wheel causes a sharp jolt to be delivered into your hands and forearms.

On more gradual bumps—or if the fork is compressed somewhat when the wheel strikes a sharp bump—the fork action is much smoother. The fork springs are slightly stiffer this year to provide a less-progressive overall spring rate through lower air pressure in the fork legs. Because of incessant leaks in the Can-Am's crossover air hose linking one fork cap with the other, though, our MX-6 usually had no air at all in the fork. Still, the springing felt all right without air, bottoming only on the hardest of impacts. But combining the fork's small problems with the rear end's serious ones results in an Open-class motocrosser that wastes a lot of effort—both its own and yours—through an inability to keep its wheels on the ground as effectively as it should. And most of that skittering and hopping has a tiring effect on you, wearing you down more quickly than do most other Open-class bikes.

That's too bad, because when the track isn't extraordinarily rough, the MX-6's behavior indicates some competent

Continued

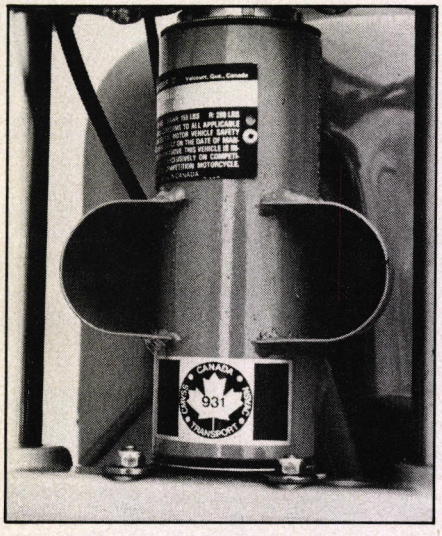
PHOTOGRAPHY: DAVID DEWHURST

geometry hidden amongst the handling demons. With the rear end raised an inch, the steering head effectively has been pulled in to 29 degrees, a half-degree less than that of last year's bike. And if that suggests to you somewhat quick steering, you're right. The Can-Am flicks easily around the inside of tight turns, but it also takes the bermed route very willingly, either by bouncing off or railing around on the outside. About the only time the MX-6 *doesn't* like to turn is when you're tired and too weary to lay the bike over, for it takes a fairly deliberate maneuver to make the Can-Am bank over in a flat, smooth turn.

When you put all of these elements together—a quick-steering motorcycle with a suspension that's less than good—what you get is a motocrosser that never does anything horrid, but at the same time never inspires confidence. That little

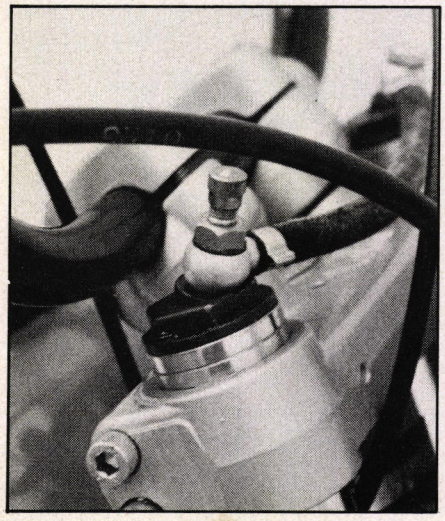
Cutting up the track is what the 400's engine does best

But once cut up, the track presents a number of problems for the chassis.



Can-Am flares its nostrils

Coming up and forward for air.



Leaky aircap connections

So both legs deflate at the same rate.

warning light in your brain is always lit when you're on the 400, telling you to back off a little bit when you should be gassing it harder. No one involved in our test ever fell off of the Can-Am, but only because we couldn't bring ourselves to ride on the same ragged edge that most other machines allow.

We *could* have found that ragged edge quite easily had we so desired, for the power lurking within the 400's monster-motor can get the bike from corner to corner at breathtaking speed. But what's most impressive is that it does so without any high-rpm fuss whatsoever, churning out ridiculous amounts of power at even more ridiculously low rpm. There are a few *four*-stroke engines, in fact, that would like to have as much low-rev grunt.

For the most part, the 400 produces more horsepower than last year's 370 through a simple 33cc displacement increase. A widening of the bore from 66mm to 72mm bumped the displacement from 366cc to 399cc without touching the 84mm stroke. This increase in swept area and a 38mm Mikuni carburetor in place of last year's 36mm Bing account for all of the extra power, because the other engine changes were intended to either broaden the power spread or lower the powerband. The exhaust and transfer ports are lower, as is the compression ratio, and these changes all reduce maximum power while giving a more gentle delivery.

To help smooth out those bigger, lower-rpm power pulses on the 400, the factory installed a heavier ignition flywheel similar to the one used on the 400 Qualifier enduro. Once out of the crankcases, the power travels via the same straight-cut primary gears used on the 370 and through a hefty clutch, which is the same as the 370's except for a different profile on its disengaging cam.

Things also have changed inside the gearbox. New gear profiles were designed for third and fourth gears to prevent tooth breakage, and the designers also altered the size and number of engaging dogs for easier shifting. It works, too, for this Can-Am shifted more positively and with less effort than any previous engine from Bombardier.

Improved shifting would seem to help the 400 retain the 370's reputation as a holeshot specialist; but in a series of staged off-the-gate races against other Open-class machines, the MX-6 could barely win, even when we screamed the engine for all it was worth. It was only after considerable experimentation that we deduced that the motor isn't effective at all if revved up to or past its power peak. For the very fastest

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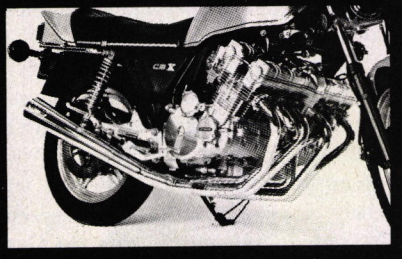

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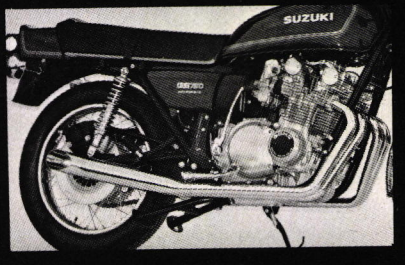

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starts, in fact, it's best to upshift *before* the power peak and use the superb lugging power of the motor instead of its brute, trench-digging horsepower. By leaving the line in third and hitting fourth as soon as the bike gets about 10 feet on the other side of the gate, followed by an upshift into fifth only 10 or 15 yards out, the Can-Am usually will outdrag everything but other Can-Am 400s and Suzuki GS1100s that made a wrong turn out of the parking lot.

The same riding technique works just as well once the start is left behind. You simply let the motor lug down and short-shift it very early, seldom revving past the 5500-rpm torque peak and *never* exceeding the 6500-rpm power peak. Forget high revs on this bike; all they do is make it harder to ride. But by lugging the engine, even the Dunlop K88 rear tire—not ideally matched to hard surfaces—will hook up and the bike will lunge from one corner to the next.

While you won't need to pay much attention to high rpm, with the Can-Am you will need to pay quite a bit to maintenance, especially at the very beginning. Because unless your dealer does an exceptional pre-delivery set-up, you'll have to spend the better part of a day going over just about every nut and bolt on the bike. And our MX-6 had a few problems whose cures went beyond normal hardware tightening, things like incomplete welds on the swingarm, improper machining of the kickstarter that continually caused it to fall off, an unbelievably porous surface on the plastic gas tank and a chain that stretched like rubber and seized its rollers like clockwork.

There were more niggling little problems, but in the end, they played little part in the shaping of our opinion of the 400 MX-6. And that opinion is best exemplified by what happened when a fairly big race came along during our test: No one volunteered to ride the Can-Am. Everyone liked the awesome power of the engine, but no one felt comfortable with the handling. It's not that the handling is bad, just that it isn't *good*, not for a motorcycle that can go as fast as quickly as the Can-Am can. So as always with these bikes, we came away from the test full of praise for the motor and a little frustrated by a close-but-no-cigar chassis.

It may be that we just have to incorporate the word "enough" into The Racer's Dictionary after all. It could be defined as the amount of horsepower produced by a 400cc Can-Am MX-6. And while we were at it, we also could redefine "more" as what that same motorcycle needs in the handling department. •

Ride Review

• Who cares about shifting gears anyway? Not me. The Can-Am 400 launched me down straightaways with such speed that I rarely had the presence of mind to downshift for the next corner, yet it was nearly impossible to lug the engine off the bottom of its power curve. Ride the hairpins in fourth gear, the Can-Am doesn't mind. It pulls away from the corners with a smooth, sustained rush of rock-churning power no matter what gear you're in. No other Open-class motocross motor makes me so happy.

I recognize the failures of the MX-6's suspension, but I'd still bear the expense of replacing both ends with sophisticated units. I figure the 400 engine already makes this bike competitive in the Open class for riders of every skill level, no matter how abusive the fork and shocks might be. Once some state-of-the-art technology has been applied to the suspension, I'm sure it'll run up front. —*Michael Jordan*

• I think it's criminal that one of the finest Open-class motocrossers available comes equipped with a cheap chain, mediocre tires and terrible shocks just to keep its price low. Granted you *can* get the MX-6 equipped with Ohlins—but I couldn't and I had to ride the bike just the way it was.

And the way it was amounts to pretty good. I'd even buy one. This bike will do just about anything you ask of it on the motocross track—that is, if the shocks can keep the rear tire on the ground long enough. You'd have to be eating a Salami sandwich at the gate to keep from getting the holeshot.

Right now, though, the Can-Am is an adolescent among motocross bikes. It looks like a grown-up bike and even acts like one most of the time. But you have to look out for those temper tantrums when the Can-Am throws itself—and you—to the ground. —*Dean Taylor*

• Maybe it's me. Maybe I have an orange-motorcycle mental block. Or perhaps there is something in my riding style that isn't compatible with Canadian motorcycles. But whatever the cause, I get along as badly with this Can-Am as I have with most others I've ridden. As a believer in raw horsepower, I admire the 400's warp-drive motor, and as an example of bridge-rigid superstructure, the much-triangulated frame at least *looks* kosher. Still, I just couldn't get up to even *nine*-tenths on the 400, no matter how hard I tried. It amplified my mistakes rather than forgiving them, just as it kept urging me to slow down rather than motivating me to ride even faster.

Eventually, I guess, Bombardier will figure out how to make one of its rocketships really handle. And when that happens, I'll sign up for one. But so far it hasn't, and therefore I won't. —*Paul Dean*

Can-Am MX-6 400

SPECIFICATIONS:

IMPORTER: Bombardier Corporation
P.O. Box 6106
Duluth, Minnesota, 55806

CATEGORY: motocross

SUGGESTED RETAIL PRICE: $2299

ENGINE

Type ..... two-stroke vertical single
Port arrangement...one piston-controlled intake, one reed valve-controlled intake, four transfers, one exhaust
Bore and stroke ..... 84.0mm x 72.0mm
Displacement 399.0cc
Compression ratio (uncorrected) 12.0:1
Carburetion ..... one 38mm Mikuni slide/needle
Air filter .....dual element: K&N reusable oiled gauze covered with washable oiled foam
Lubrication ..... pre-mixed fuel and oil
Starting system ..... primary kick
Ignition ..... flywheel magneto CDI

DRIVETRAIN

Primary drive type ..... straight-cut gears
Primary drive ratio 2.60:1
Clutch ..... wet, multi-plate
Final drive type ..... #530 chain (⅝-in. pitch, ⅜-in. width)
Final drive ratio ..... 14/46 : 3.29:1

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.91	24.86	3.2
II	2.00	17.09	4.6
III	1.40	11.96	6.6
IV	1.11	9.48	8.3
V	0.91	7.77	10.1

SUSPENSION/WHEEL TRAVEL, IN.

Front .....air-spring, 38mm stanchion tube diameter/11.5 in. (292mm)
Rear .....5-way adjustable spring preload 10.8 in. (273mm)

BRAKES

Front .....drum, single-leading shoe
Rear .....drum, single-leading shoe, cable-operated

TIRES

Front .....3.00 x 21 Dunlop Sports Senior
Rear .....5.00 x 18 Dunlop K190

DIMENSIONS AND CAPACITIES

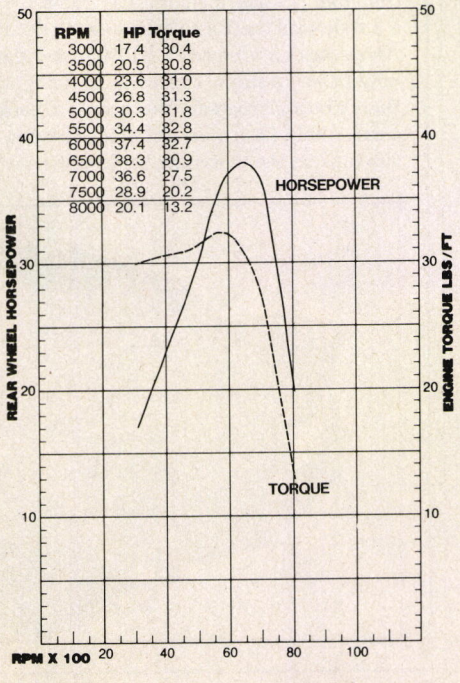
Weight .....233 lbs. (105.7kg)
Weight distribution .....45.5% front, 54.5% rear
Wheelbase .....57.8 to 59.2 in. (146.8 to 150.4cm)
Seat height .....37.3 in. (947mm)
Handlebar width .....33.5 in. (851mm)
Footpeg height .....15.5 in. (394mm)
Ground clearance .....12.8 in. (325mm), at frame/footpeg junction
Steering head angle .....29 degrees from vertical
Front wheel trail .....4.76 in. (121mm)
Frame .....tubular chromoly, double front downtubes
Fuel tank .....plastic, 1.5 gal. (5.6l), no reserve
Instrumentation .....none
Top speed (calculated) .....76 mph (122kph)

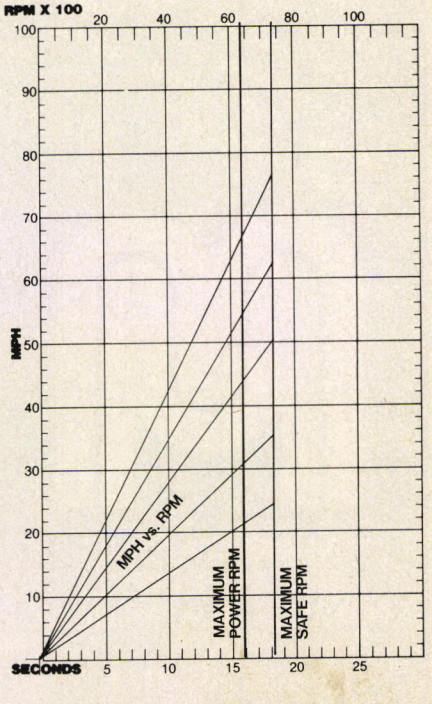
All weights and measurements are taken with machine unladen and fuel tank empty.

COMPARATIVE TEST DATA:

Make & Model	Horsepower	Wheel Travel Front/Rear, in.	Weight (fuel tank empty), lb.	Weight bias Front/Rear percent	Transmission, number of speeds
Can-Am MX-6 400	38.3	11.5/10.8	233	45.5/54.5	5
Maico 400 M1	35.5	12.3/12.0	233	46.8/53.2	5
Suzuki RM400N	28.1	11.2/11.8	229	46.3/53.7	5
Yamaha YZ465G	NA	11.8/12.2	225	NA	5
Montesa Cappra 414VE	28.5	10.9/10.7	236	45.3/54.7	4
Husqvarna 390 CR	29.3	9.6/10.0	234	45.3/54.7	6

PERFORMANCE:





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PRODUCT EVALUATION:

Tour Pack

Beating the bungies, side-stepping the saddlebags.

• I've used bungie cords for more than 15 years, mainly because I don't like bulky saddlebags. But these rubbery straps have some disadvantages, such as being able to contain only a limited bundle of gear.

Tour Master has solved my problem with the Tour Pack. Essentially, the Tour Pack is a software bag that fits on the luggage rack of a motorcycle. A pair of spring-tensioned hooks that ride on runners of an aluminum frame mount the bag to the rack. The Tour Pack's universal fit means it takes only seconds to mount or remove it from a bike.

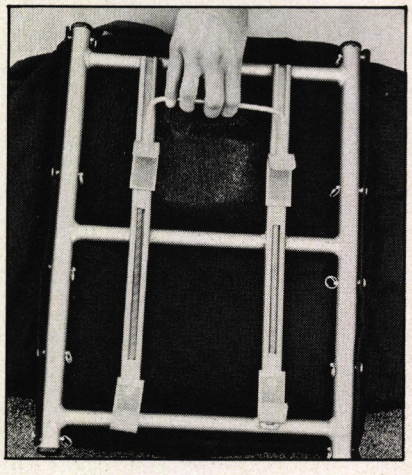
But it's not the convenience of mounting that I like; it's the amount of gear that stows in the six zippered compartments. The two main compartments have two-way nylon zippers, and each is large enough to hold a full-coverage helmet. Most of your travel gear tucks neatly away here. To help hold the gear snugly in position, two nylon-web straps run the width of each compartment to compress the cargo. The belts also serve as shoulder straps for carrying the pack once you've reached Point B, or for securing additional cargo on the pack.

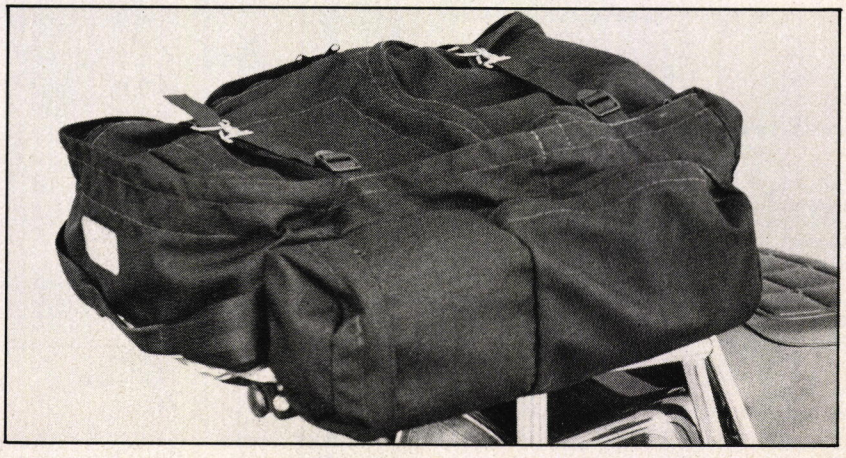
The smaller compartments have one-way zippers, and are useful for storing smaller items like such as gloves and toiletries. Chain lube and a spare can of oil tuck handily away in one of the two cylindrical pouches on the right side, while the single 17-inch-long pouch on the left fits a helmet faceshield and pair of shoes. The Tour Pack offers more than 3500 cubic inches of packable space, yet the whole thing weighs less than four pounds, including the frame.

I rode with the Tour Pack mounted on an Amco rack on a Suzuki GS1000E, and the only major problem I had was in filling it; there's enough room for two people to pack comfortably for a weekend ride. The nonslip tape on the mounting hooks prevented scratching the rack's chrome surface. Since the rack places the load at the extreme end of the bike, the handling is affected, causing an aggravating sway, especially when cornering. To compensate, I jacked the Suzuki's spring preload to the third setting and set shock damping on number two, so rear tire squirm was only evident when I put the 1000 through a fairly fast sweeper.

The Tour Pack sells for $135 from Tour Master, 2115 Colorado Avenue, Santa Monica, California 90404. There's an optional bright yellow rain cover for $13.95 that slips over the pack. Both the rain cover and back side of the pack have the same reflective striping as Tour Master's riding suit for better visibility in foul weather or night riding. The Tour Pack has a one-year warranty, which is reassuring, but more important to me, the Tour Pack is all the road luggage I'll need. Whenever I get the see-the-country itch, I can have it packed in five minutes and mounted in three seconds. Beats wrestling those bungies anytime.

—Dain Gingerelli





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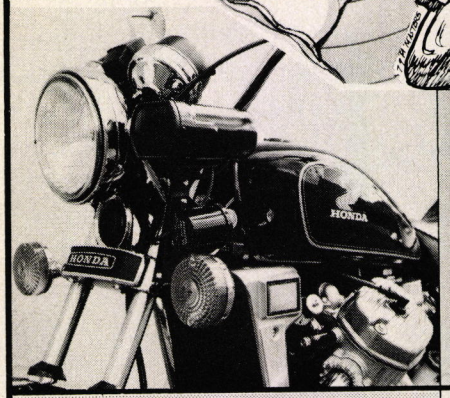
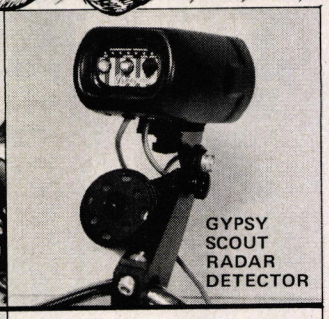
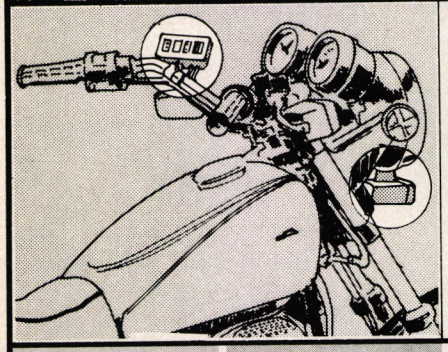
Gypsy Scout T.M.

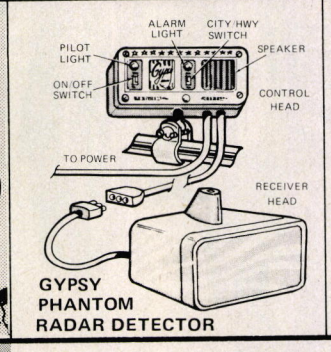
Motorcycle RADAR DETECTORS





GYPSY SCOUT RADAR DETECTOR





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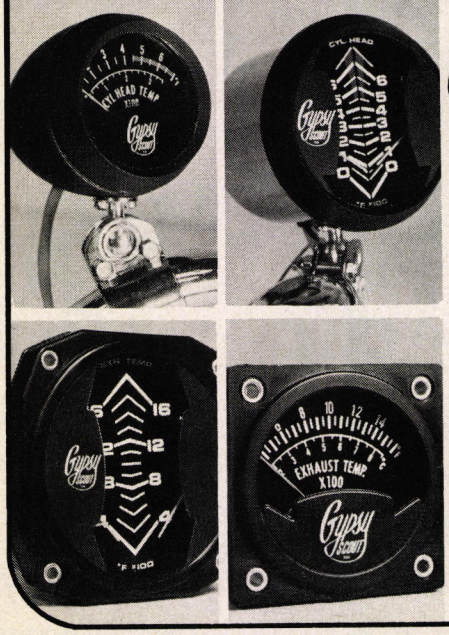

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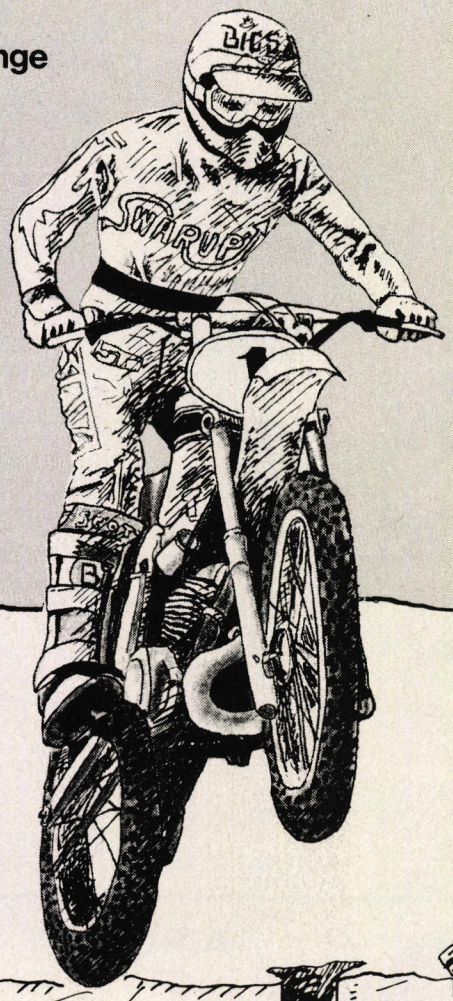

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SPORT LINES

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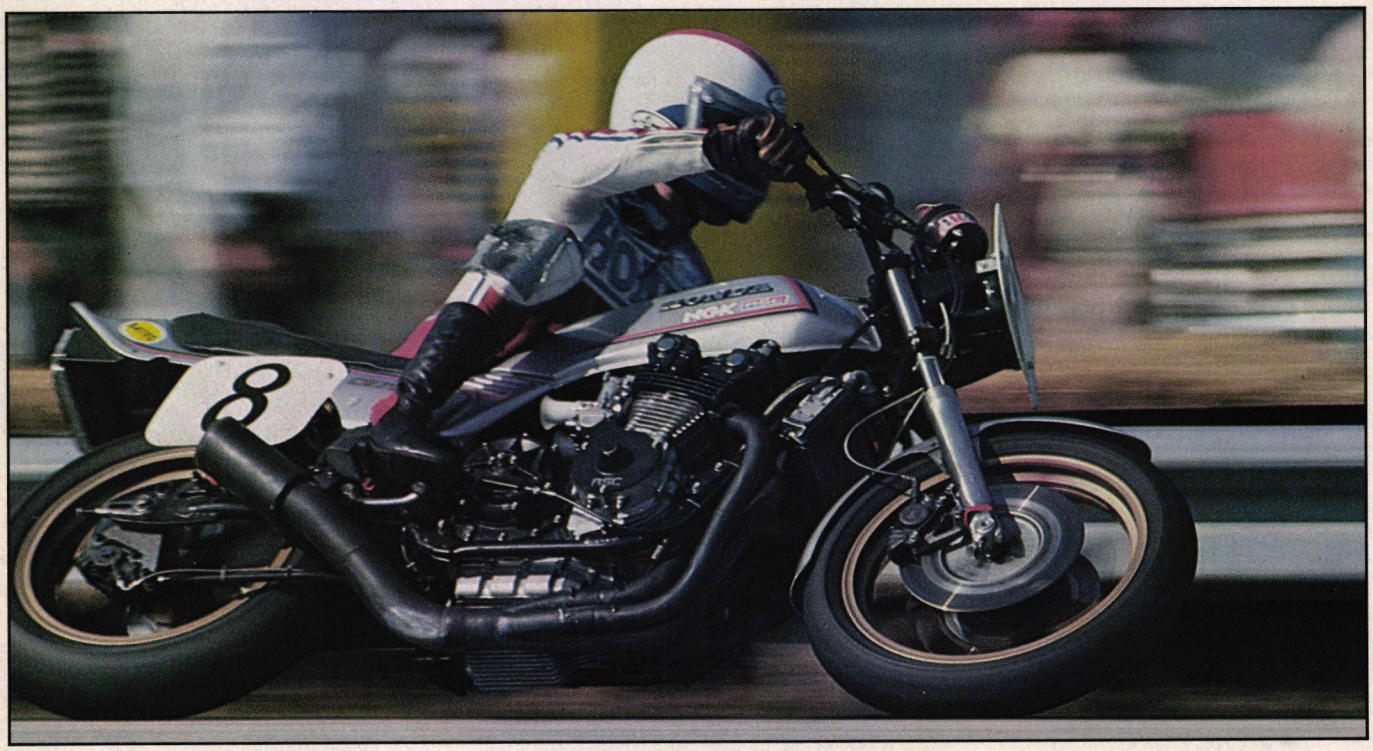
EDITED BY MICHAEL JORDAN

Battle of the Titans

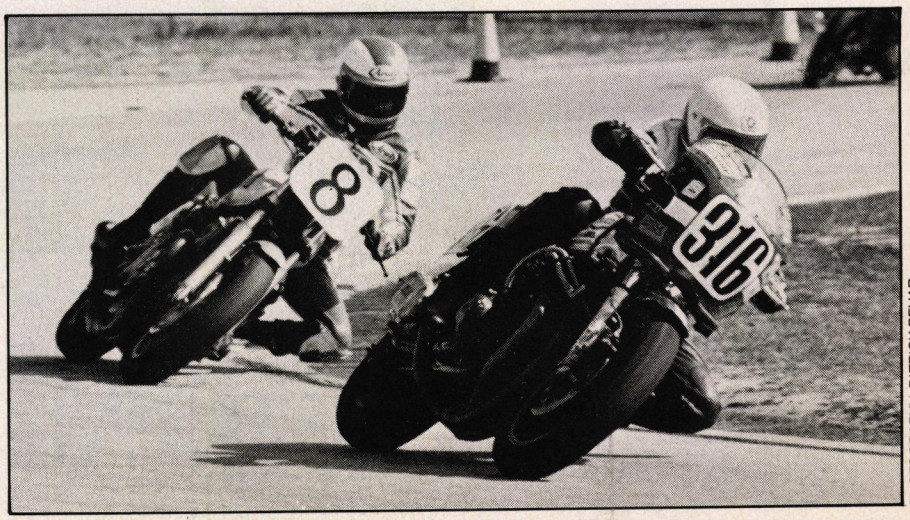
Honda and Suzuki Superbikes duel at Daytona.



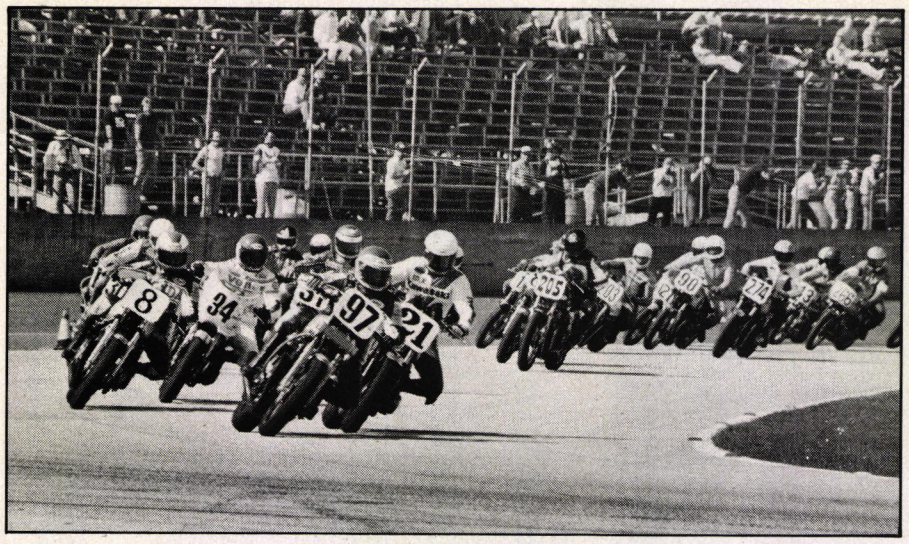
MIKE BROWN

• Once again the confrontation of major motorcycle manufacturers, an easy-to-understand sprint race format and the roar of four-strokes combined to make the Superbike event the centerpiece of Daytona's annual race-off. Graeme Crosby's winning ride on a Yoshimura Suzuki from the 48th starting position and his duel with Fast Freddie Spencer on a factory Honda hammered home the importance of Superbike racing in America.

After its 1979 Superbike sweep of Daytona, the Yoshimura team arrived with three Suzukis again—one for '79 AMA Superbike champ Wes Cooley, one for David Aldana and one for New Zealander Crosby, detached from duty with Suzuki of Great Britain's GP team. The only apparent change from last year was the installation of a quarter-fairing in the GS1000S-style. Cooley ventured that the new engines



PHOTOGRAPHY: PATRICK BEHAR



Rush-hour in the first turn with Pierce (97), Lawson (21), Spencer (8), Cooley (34)

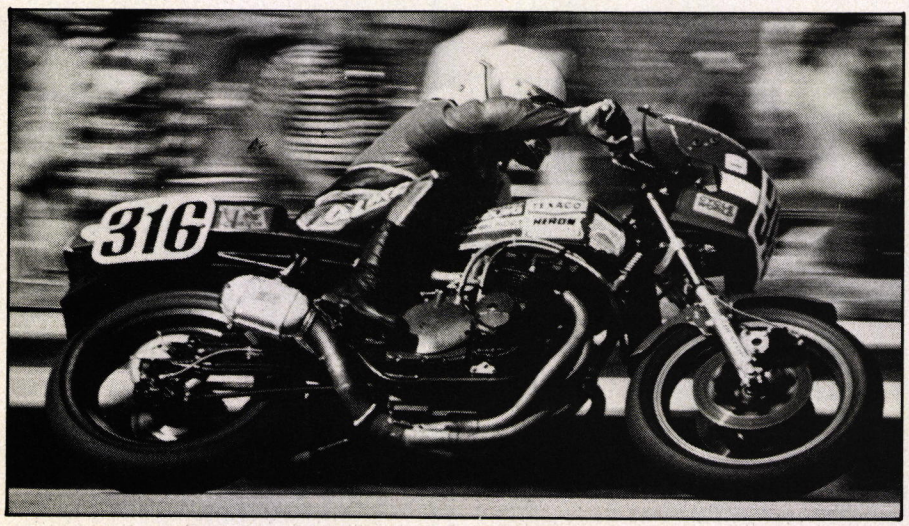
Dicing for dollars with big-time bikes, big-time riders and big-time sponsors.

cranked out about seven more horsepower thanks to the cylinder head.

Kawasaki met the Yoshimura challenge with two Superbikes for Eddie Lawson and Gregg Hansford. The chassis of both bikes resembled that of last year's entry, while Lawson's featured an engine direct from the back room at Kawasaki Heavy Industries in Japan. Indeed, Lawson clocked the fastest top speed during practice of 166 mph, seven mph faster than the Suzukis—remarkable considering the Kawasaki engine's reputation for a cammy powerband. Lawson denied speculation that special tall gearing had been packed behind the KHI motor, but said "The team's been doing a lot of work on the dyno with Kerker Pipes." The two factory Kawasakis also were joined by twin Z1-Rs from the Moriwaki endurance racing team.

There was plenty of local color for the Superbike race in the form of Ducatis, a Moto Guzzi and even a Triumph, but the fires of marque fever were really fanned by the appearance of a three-bike team from Honda. CB750F-replica frames had been outfitted with reworked GL-1100 forks, cantilevered shocks and a full-race motor purchased by the team from the factory's Racing Services Center (RSC). Last year's Daytona Superbike winner Ron Pierce, rising media star Spencer and Steve McLaughlin filled the saddles of the silver F-models, while several privateers managed to equip their back-door beauties with righteous RSC hardware.

The smart money gravitated to the Yoshimura team, despite the fact that between them Crosby and Aldana popped five engines during practice for the Superbike and Formula 1 events. Honda had rented the track for three days prior to Speedweek, but Pierce reported that only on the last day had any testing been genuinely conducted, and then only two hours per rider. In the qualifying heat race, though, Honda's combination of EI carburetors, a Jerry Branch cylinder head and a dyno-tuned pipe produced good speed and Spencer nipped Cooley at the finish line, allowing him to assume the pole position for the main event. Also in heat race action, Crosby and Aldana relegated themselves to the second wave when they failed to insure that they were scored properly on the last lap. Cooley wasn't disturbed by Spencer's charge, despite the worried looks on the faces of Yoshimura devotees. He thought it gave him an edge: "Last year, I underestimated



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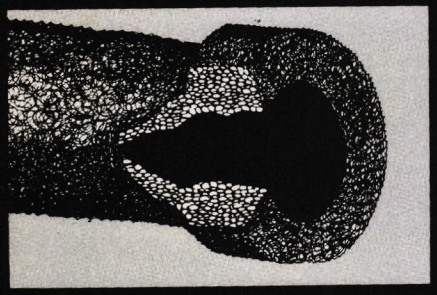

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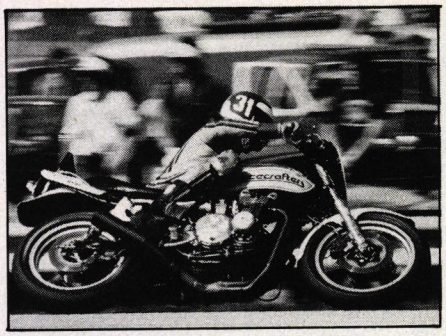


Klinzmann's Racecrafters Kawaski Z-1

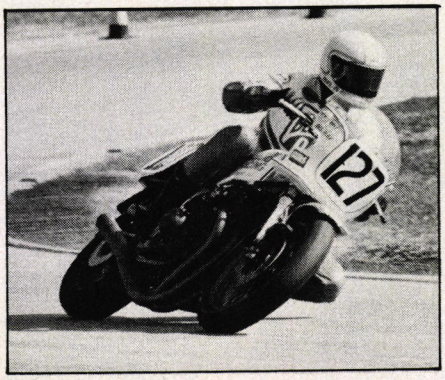
Big loser in the mpg contest.

Freddie. I've been slowly tuning myself in, so the heat race gave me a good idea of where we were compared to the Hondas."

By the time the Superbikes took the starting grid, the handicappers were confused by many changes to the machinery. Honda changed shocks and both Pierce and Spencer abandoned their trick set-up because, as Pierce commented, "The EI carbs accelerate like you wouldn't believe. With carbs and pipe we have 10 or 12 more horsepower on the dyno. But the EI's throttle springs are just too stiff and tiring over a long race. When the slide's down, you almost have to yank it open, and it's hard to control the power coming out of the corners."

Meanwhile Crosby had suddenly switched from Dunlop tires to Goodyears, even though he described the Dunlops as "just brilliant." Apparently, Dunlop tire engineers had to insert a 10mm-wide strip of rubber in the middle of the slick to accommodate the wide rims of Superbikes, and it made the No. 316 Suzuki weave slowly on the banking. Crosby tried to make his steering slower to adjust for it, but the low bars he had fitted to the bike interfered with the fork tubes. Crosby reckoned the weave would be too tiring over a 100-mile race and fitted Goodyears on race morning.

The starter threw the flag after a long wait from the 10-second sign. Cooley said, "I had my heels planted in the damn asphalt to keep the bike back because it was in gear." By the time the flag was thrown, the luck of many riders had already run out. Lawson fried his clutch in the interval, Aldana's front tire had a slow leak and Hansford's gas cap would soon vibrate loose.



Dennis Smith's privateer Suzuki

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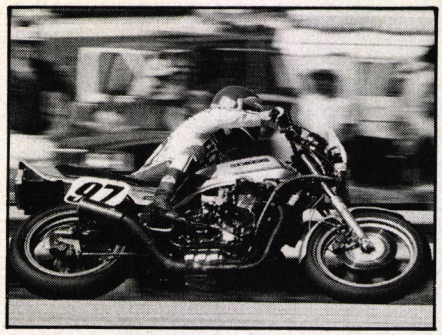


Pierce's third-place Honda

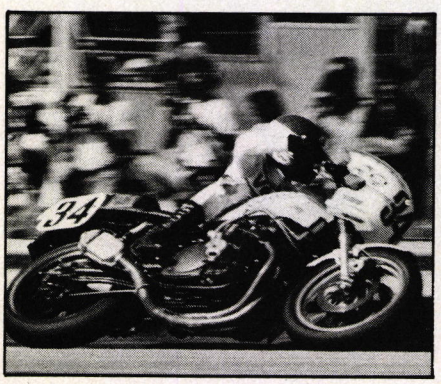
Fast enough and more power on the way.

Pierce got the scratch after barely getting his bike fired in time, but Spencer came past under braking for Turn 1 and at Turn 2, Cooley followed. Cooley led at the end of the first lap and a Suzuki/Honda dust-up ensued, with Cooley streaming by on the banking and Spencer gaining ground under braking for the decreasing-radius Turn 1 and the chicane. But on the ninth lap, Cooley reported, "I lost 300 rpm on the banking—I thought I was towing Spencer. Then right before the chicane, the crank broke."

Spencer seemed to be in the clear, but Crosby, hunched over his low bars and manhandling the Suzuki in the style he learned racing four-strokes in Australia, had fought his way onto Spencer's trail by lap seven. A sloppy pitstop by Honda, with gallons of spilled gas and a bike reluctant to start, gave the lead to Crosby until he pitted three laps later.

Crosby hunched over the bars even further after his pitstop and went to work on Spencer. Even though his bike—Cooley's 1979 chassis—wasn't equipped with Yoshimura's current anti-dive system, he didn't give anything up to Spencer under braking. Finally he passed the Honda on the banking and used his superior acceleration and top speed to keep Spencer at a two-bike-length distance. Crosby later said he wasn't worried about Spencer— "I didn't have to put meself out to ride at his pace"—but he almost blew it anyway. An accident in Turn 1 near the end of the race distracted him for a second and "I came out and went for third and got first. Swung the needle on the tach all the way around to 500 on that one," he said.

Finally, two laps from the end, Spencer re-



Yoshimura Suzuki GS1000S

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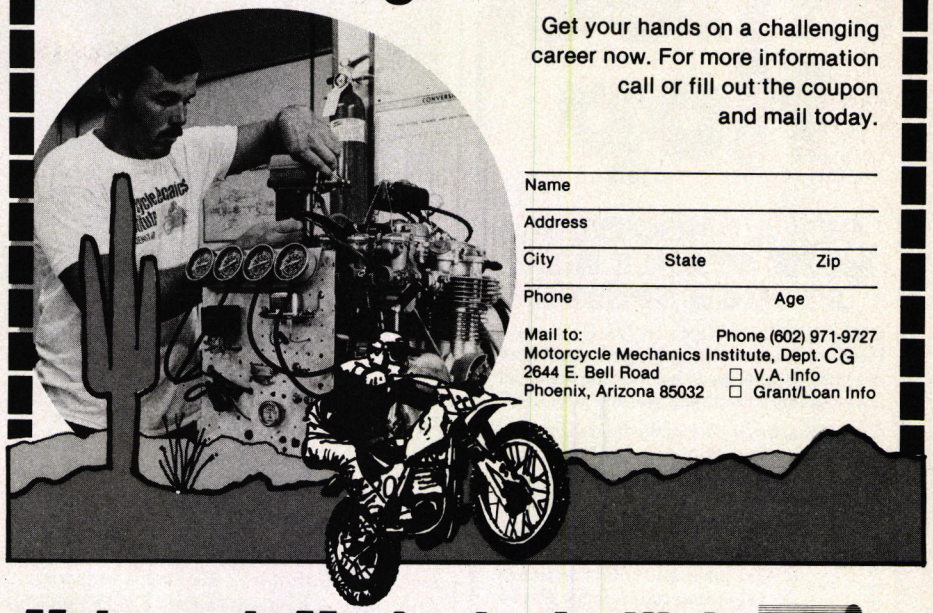

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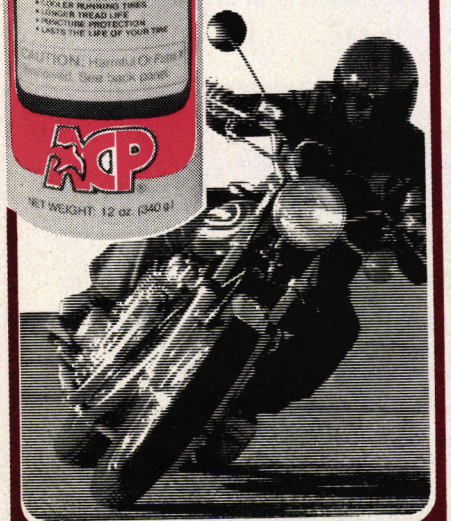

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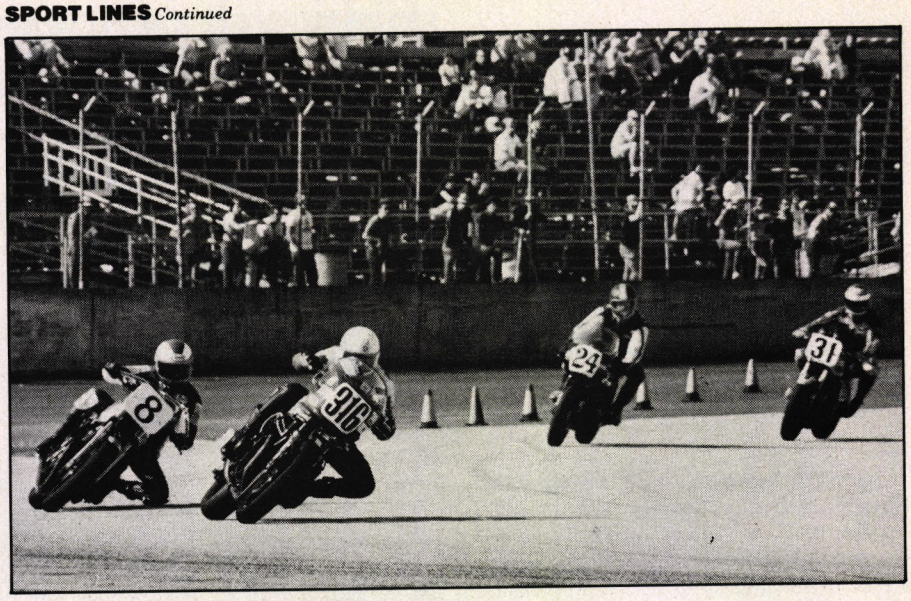
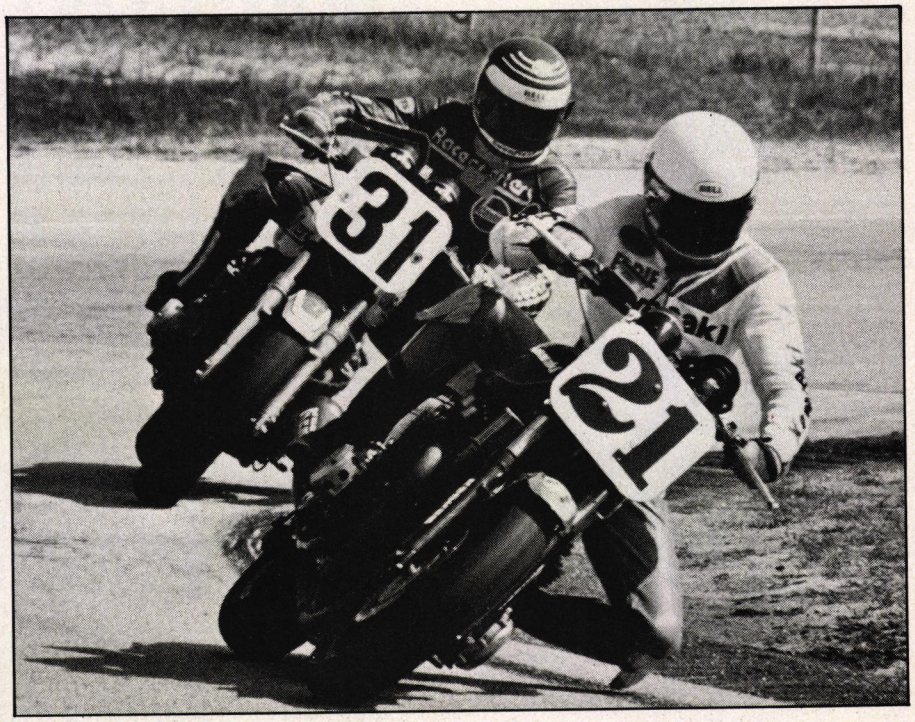


called, "I noticed the revs were down and I knew it was impossible to win." Honda had fitted the bike with twin oil coolers for additional cooling, but the lower one prevented the airstream from reaching the engine and the 16-valve motor choked in its own heat. Pierce finished third after losing his rear brake at midrace. The Moriwaki Z1-Rs finished fourth and fifth. And consistent Dennis Smith rode his GS1000S into sixth while Harry Klinzmann finished seventh, jiggling his Racecrafter's Z-1 from side to side in order to drain the last few drops from its small gas tank. As the top-rated privateers, both Smith and Klinzmann were pleased, for as Klinzmann said, "Guys like Yoshimura and Honda trick themselves out. I figured we could lay back and still do well, and I was almost right."

Crosby had mixed feelings in victory lane. His contract with Suzuki GB tied him to Dunlop and Champion while his bike carried equipment from Goodyear and ND, a situation that nearly prevented him from starting the race and disqualified him from contingency awards. In fact, he wasn't even wearing a Bell helmet, the Superbike event's sponsor. Meanwhile a good deal of his prize money would have to pay for his baptism in the game of rentacar tag that is a tradition at Daytona. Crosby incapacitated one rentaracer when the New Zealander, unused to automatic transmissions, shifted into "P-for-Pass" at full chat. Another car passed into history when it became mired in the surf while Crosby was joyriding along the beach. It took four tow trucks to extract it. Still, Crosby didn't leave victory lane entirely unhappy. He did have a bottle of very tasty champagne.

—Michael Jordan



Lawson leads Klinzmann

Grounded by a cooked clutch.

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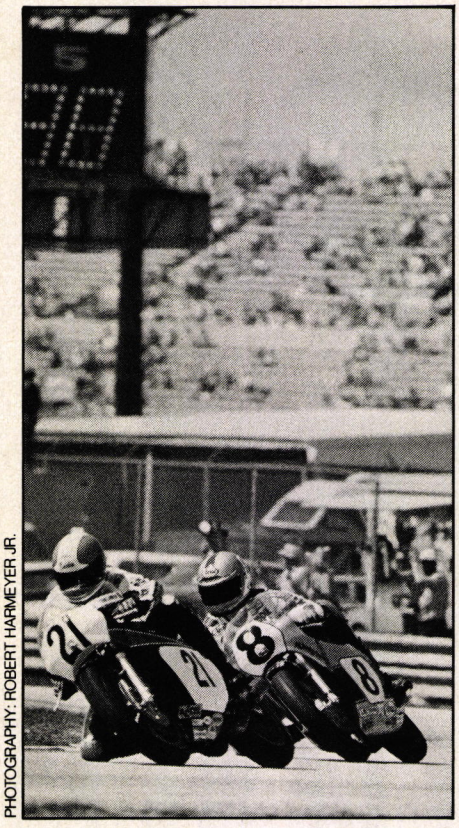

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• It's kind of a mystery why the Lightweight Expert 250cc class continues to have any currency at Daytona. These days the 250 class in AMA racing offers a haven for local pros rather than a battleground for top-caliber riders. But though most of the field is filled with racers still learning their trade, the fight for first at Daytona is usually a fairing-rattling affair.

Last year, Skip Aksland, Freddie Spencer and Randy Mamola scrapped for the lead. Aksland rode a parts-bin special from Yamaha U.S.A., Spencer an Erv Kanemoto Yamaha special, Mamola an exotic Bimota-Yamaha. This year, there were two new faces in the lead dogfight—Eddie Lawson and Germany's Tony Mang—but the mounts represented similar schools of thought. Spencer rode the same Kanemoto wunderbike as last year—indeed, he admitted openly that it hadn't even been prepared until he suddenly decided to enter the race on the Thursday before the Saturday 100-miler. Lawson rode an off-the-shelf TZ250G and Mang had his world championship Kawasaki KR250 exotibike super-tuned for Daytona. The results were the same as last year, too. The standard Yamaha parts in Lawson's bike prevailed over Mang's and Spencer's

But before the finishing order shook out, the lead changed hands several times a lap in a

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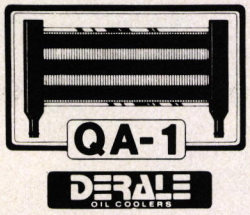

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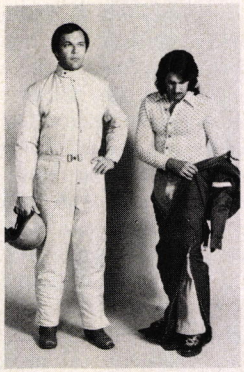

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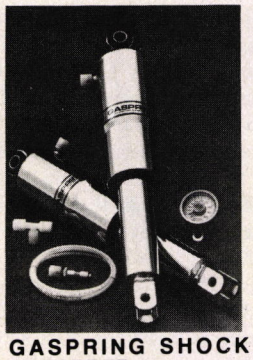

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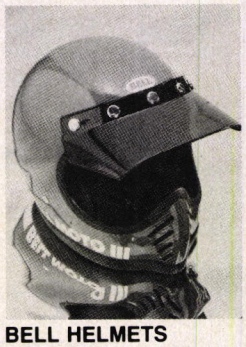

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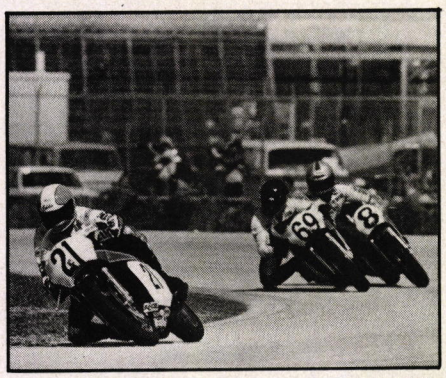


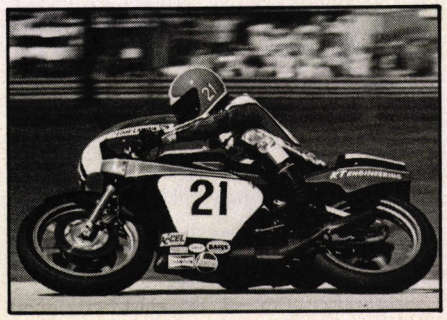
Lawson (21) Spencer (8) and Liubimsky (69)

Taking first with a factory-fast Yamaha.

typical 250-style dogfight. Finally Mang stretched a small lead over Lawson, while Spencer struggled to keep up, clearly lacking horsepower. But with only four laps to go, Mang gave up the lead when his Kawasaki heated up its tires. Even so, Lawson and Spencer became so involved in trying to force one another into the lead as a preliminary to a race-winning slingshot, that Mang recovered lost ground. Spencer later commented, "Eddie and I were deciding who wanted to be second in Turn One, and then Tony was right with us." Then Spencer, forced to lead through the infield, slowed coming onto the banking and looked at his engine—a dodge to fake Lawson into the lead that had helped Spencer win his Superbike heat against Cooley. But Lawson went by at full speed, totally unfaked, too fast for Spencer to get his draft. And so did Mang. In victory circle, Mang said through a translator, "On the last lap, I think they wait to see who would lead, so I tried to burst through."

The Kawasaki did indeed burst through into the lead down the backstretch, but Lawson and Spencer caught up again at the chicane with retina-separating braking. Lawson exited the chicane behind Mang, but went high and pulled out a two bike length lead at the finish line. Spencer tried to go low, but Mang squeezed him even lower and maintained a margin of inches over Fast Freddie.

Lawson offered no secrets in victory circle except that his bike ran out of gas on the cool-off lap. He did say, though, that "The thing was just a rocketship—that was a big help right there." So it seems that for 1980 as it has in the past—exotic $10,000 250s notwithstanding—the express ticket to victory circle in 250cc racing will continue to be the plain-vanilla TZ rocketship that anyone can buy at his nearby Yamaha store. *—Michael Jordan*



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Off-Road Shoot-out

Husky, Kawasaki and Yamaha aim at enduro and desert championships.

• Off-road racing, like enduros and desert events, has long been dominated by amateurs and not actively supported by the mainstream of the motorcycle world. Because of the lack of spectator appeal the factories have shown little interest in using off-road racing to promote their bikes. Most efforts by manufacturers have been limited to a few stock motorcycles and a couple of part-time riders.

The major exception to this trend has been Husqvarna. In the past decade Husky has all but dominated the desert scene in the Baja and the American southwest. Riders like the legendary J.N. Roberts, Mitch Mayes and Larry Roeseler have kept the Swedish marque in the winners circle of most important races. And the publicity produced by victories in the Mint 400, Baja 1000 and Barstow-to-Vegas races has helped bolster Husky sales. Enduro events have also regularly fallen to riders mounted on Husqvarnas and especially to the amazing Richard Burleson who has five consecutive National enduro titles.

Recent sales increases of the line of Japanese trailbikes and enduro-bred racers, however, have prompted the Japanese factories to become more heavily involved in off-road competition. The Japanese manufacturers have fielded tentative race team efforts for enduros the last couple of seasons, but this year marks the first time one has added desert racing to the program and given the entire effort a high-priority status.

Yamaha is the company and it has assembled a formidable team to contest desert and enduro events. Seven full-time riders include Harry Roeseler, Jim Fishback, Bruce Ogilvie, Chuck Miller and Jack Johnson will compete in desert and some enduros, while Mike Hannon and Rick Munyon will spearhead the LSDT-Enduro effort. Yamaha race manager Ken Clark

Continued

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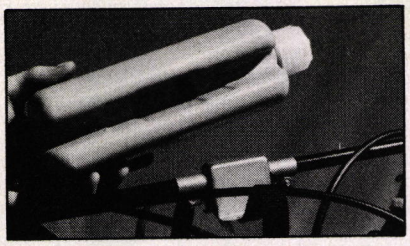

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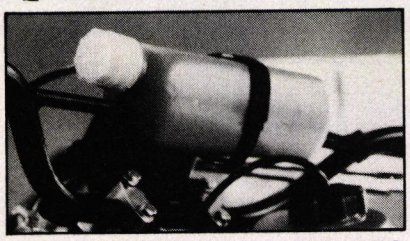

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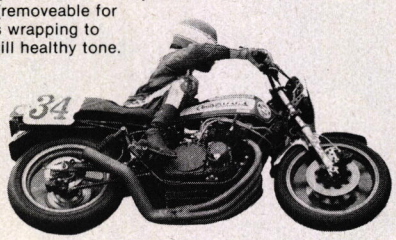

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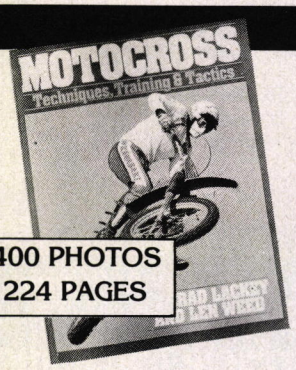

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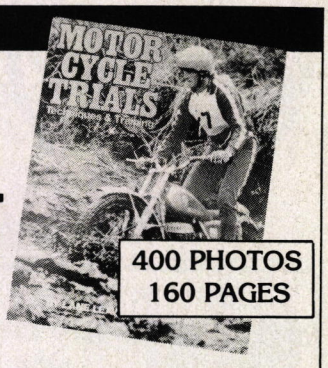

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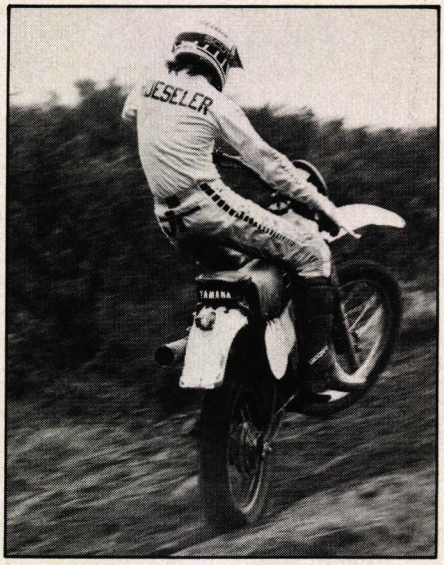


comments, "This is the most powerful off-road team ever assembled in one year. The riders will be mounted on IT-derivative bikes for Enduros and will be furnished with team trucks and mechanics." Adds Jack Johnson, "At this time no one has put together a program with enough skill to be a threat to us."

Although the other Japanese firms have yet to show interest in desert events, they have been busy building Two-Days enduro efforts for the '80 season. The team with the most experience probably is Kawasaki. Kawasaki signed Jack Penton to head its effort, and he has put together an impressive team. Joining Penton on the trails will be riders Kevin Lavoie and Ted Liembach. Dane Liembach will attend to tuning chores. Jeff Hill, Mark Hyde and Mark Dodd also will join the Kawasaki on the enduro trail as will two factory mechanics.

As Kawasaki's Rom Lovil explains, "We have the product this year so we hired the best guy there is—Jack Penton. We think he has put together the best team that will be competing, they have six ISDT golds and four silvers among them. Fielding a desert team hasn't come up yet, but Kawasaki is still new to off-road and we'll have to see."

Husky faces the toughest competition it's had in years and apparently has geared up for the challenge. Burleson will again head the enduro effort, joined by Mike Meltton and Bob Popiel, while Brent Wallingsford, Mike McGowen, Jeff Kaplan and Jim Jackson handle the desert chores. Spreading their time between the two will be Scott Hardin and Rick Finger. Says Finger, "All the new competition will be good for the sport and the riders all like it. It will be hard on us, though, as the Japanese teams like Yamaha have a real advantage because of the money. But we have a good program and it's always worked for us, so we're going to stick with it."

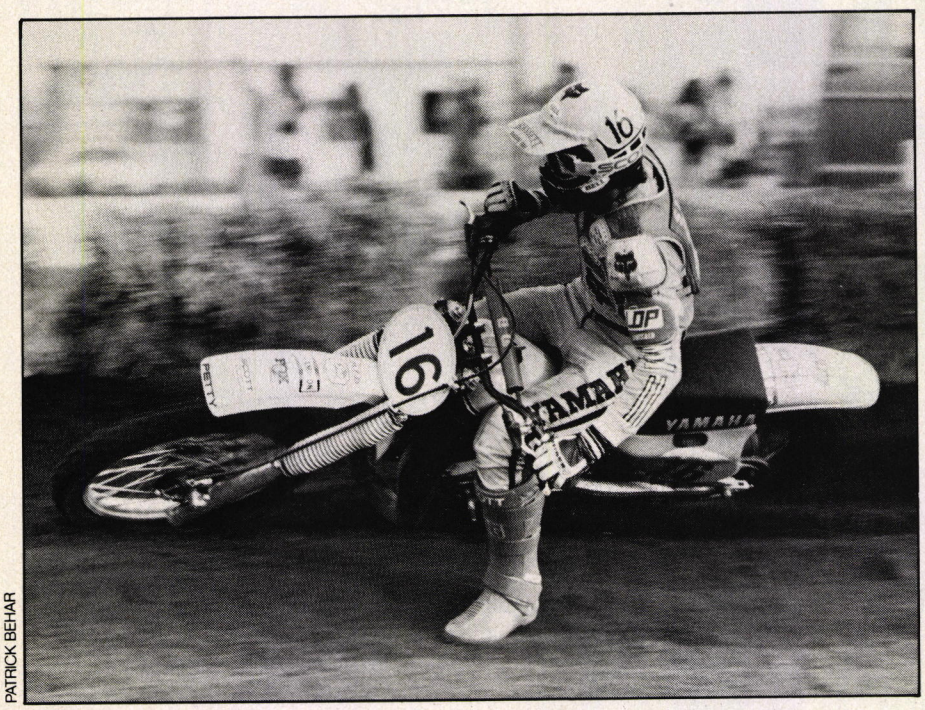
The tough new competition indeed should help improve U.S. chances of winning a ISDT Vase trophy someday, and it probably will improve the quality of the bikes for sale to the public. But for right now, as Rick Finger adds, "It means if you win, you really deserve it."

—Terry Whytal

DAYTONA STADIUMCROSS:

The Stadiumcross Conundrum

Finding the go-fast formula for the motocross bikes of the night.



PATRICK BEHAR

Staten slithers at Daytona

Turning the corner toward first place.

• Every year the Stadiumcross series begins with the unveiling of the latest two-wheeled hardware designed to handle brutal and confusing man-made tracks. Team managers smile broadly as swarms of mechanics attend to the shining new machinery while the riders stand by, waiting their chance to test the newest version of the ideal indoor motocross bike. Months of testing, development and computer analysis backed by even more testing are all on the line.

Theories about the ideal stadiumcross bike design abound in the pits. Each has its champion of reason, for each team has struggled to find the right combination of factors required to overcome the apparently contradictory requirements of stadium racing; each is confident that the answer has been found. Some bikes work reasonably well and many show a hint of success, but by seasons' end most riders are on board a trusty outdoor bike and the engineers have scurried back to the drawing boards.

The problems of stadiumcross bike design lie in four major areas. First of all, building the bikes themselves is both a philosopher's dream and a diplomat's nightmare, for each individual part must function in a spirit of compromise due to the peculiar nature of stadium tracks. Secondly, the motorcycle's mechanic must be able to maintain whatever trickery the unfamiliar stadiumcross machine might incorporate while still being able to properly attend to his rider's outdoor bike. Third, the riders need bikes that they can adjust to quickly and easily, for the stadiumcross format doesn't allow hours of practice and familiarization. And finally, even the largest factories do not have enough money to develop a motorcycle design exclusively for stadiumcross.

To really understand the stadiumcross bike, you must first understand the tracks themselves. Nowhere in the motocross world are motorcycles as brutalized as on a stadium track apparently designed solely to catapult bikes as high into the air as possible. The impact registered by the suspension after falling straight down from 10 feet in the air is tremendous. Dave Osterman, who wrenches Mike Bell's Yamaha, notes, "The spring rate is critical, and indoors Mike needs a much stiffer suspension."

Apparently, then, the first parameter of stadiumcross bike design would be long-travel suspension with stiff spring and damping rates capable of handling the vicious drop-offs and monstrous whoops. But then you must provide for hairpin corners that require nimble handling. The ideal stadium bike must be capable of changing lines in the tight turns in order to pass under crowded racing conditions. And this requirement suggests a bike with a low center of gravity that can be flicked from side to side. It also points toward a bike with shorter suspension travel to minimize front-end dive in

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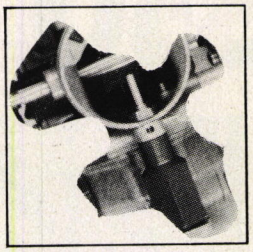
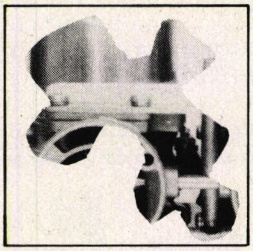


THE R.P.O. THIRD SYSTEM

MAKES YOUR KERKER COOK



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ROBERT HARMEYER JR.

Mike Bell and third-place Yamaha

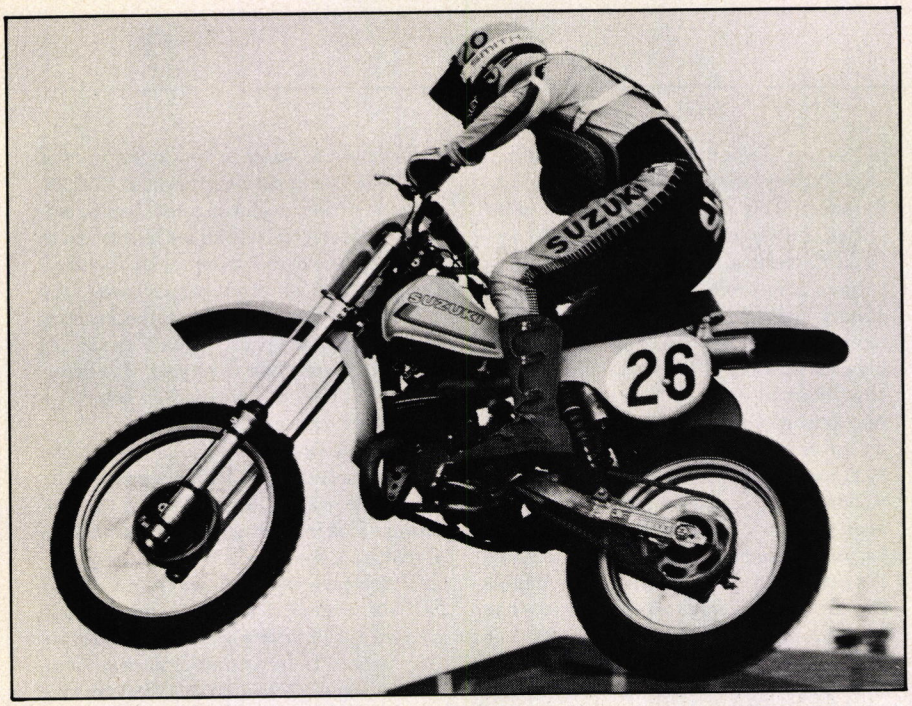
Using long legs as suspension struts.

the corners to keep steering precise.

Suzuki built a few short-travel supercross specials late in 1978 for just these reasons, but by late in 1979 they had been abandoned. Explains team manager Mark Blackwell, "Early in the year we ran those bikes and did pretty well. We were able to turn faster lap times. But then the riders would get too tired." Apparently, a shorter-travel bike has its advantages, but few riders can withstand the pounding they must endure as a consequence. A few riders like Kawasaki's Jeff Ward still prefer a shorter-travel bike for stadium races, however. Comments Mark Johnson, Ward's mechanic, "We lower the Uni-Trak as far as possible and turn the axle cam (Kawasaki's unusual rear axle mount) so the bike sits lower."

With shorter travel requiring many sacrifices in performance, some riders have attempted to make their bikes turn easily while maintaining full suspension travel. Suzuki's Mark Barnett raises the fork tubes in the triple clamps for a steeper steering-head angle. Tuner Doug Grant says, "The Suzukis need to have the rake pulled in on these tracks with such tight turns, and it also makes the wheelbase a little shorter, which helps in the tight sections."

So far, the whoops and hairpins can be handled with a combination of strong legs, strong-suspension and quicker steering, but what of the high-speed straights filled with ruts and invisible bumps, waiting to provoke tank-slappers that spit riders on their heads? Too-quick steering geometry makes the front wheel sensitive to deflection, after all. When the engineers don't have the answer to this problem, it's up to the riders to keep the bike pointed straight. And basically, it gets down to what Tony DiStefano says: "You gotta keep the gas on and hang off the back of the bike and keep the front end light."



Marty Smith turns from red to yellow

Securing second with a Suzuki.

Once the suspension has been dialed in and the handling sorted out, the engine is next. Matching gearing and powerband is critical, yet stadiumcross tracks have conflicting priorities. The engine must twist out lots of horsepower at high revs for the all-important start, while providing enough low-end and mid-range punch to keep from being outgunned in the tight infield corners. Every rider seeks a different combination.

Kawasaki rider Warren Reid asserts, "The start is the most important part of stadium racing and I really want good power." Maico star Danny Chandler does it differently, as mechanic Bill Deprado explains, "We've gone to a different barrel-and-pipe combination. What we want is lots of midrange." Jeff Clark, Scott Gillman's tuner, says, "We've been looking for good low-end punch for coming out of the tight turns and then we play with the gearing until it's just right."

The task of turning the total package into a bike greater than the sum of its parts falls to the mechanics. Their job is already arduous, for from the time they receive factory prototypes early in the year until the time they discard the trashed remains at the end of the season, they twist wrenches constantly. Consider that they must provide a bike that is both competitive and reliable, yet at the same time they must test new developments from the factory engineers. And once you understand that some riders like Jeff Ward might require three different bikes every year—one for 125 Nationals, another for Stadiumcross and another for the Trans-USA, each of different displacement—you begin to realize how difficult it is to sort out the peculiar problems of a stadium bike.

Now that you're thoroughly confused about the stadiumcross bike formula, there's one more variable to throw into the equation: The riders themselves must adjust their riding styles to fit stadium circumstances. From the outdoor tracks that they practice and ride on five times a week they go to a track that is much shorter, tighter, packed with more traffic and filled with more dangerous obstacles—not to mention the tension-filled atmosphere of the stadiumcross. Sliding a rider onto a bike that is both radical and unfamiliar can compound the problems of bike design. Chris Hines, who attends Suzuki rider Brian Myerscough's bike, reports, "We don't really do too much to the bikes anymore, while other wrenches make the bikes more radical. I think it's more important to make it easy to ride." Adds Myerscough, "I think it's better to have a bike that I'm used to and have confidence in."

The real bottom line of stadiumcross bike design just may be money. The builders must decide if they can afford to devote their R&D sections to months of testing and thousands of dollars of fabrication to build a bike that will never be sold to the public. The logistics of shuffling a team of race bikes around the country are already complicated. The Yamaha team has nine riders this year. In addition to their regular mounts, the Yamaha riders get a special bike for Supercross plus a back-up. Getting all these bikes in the right place at the right time with the necessary spare parts while allowing enough time for testing provides an open invitation for a dance with Murphy's Law.

As it turns out, though, the factories are devoting more energy to stadium bikes as the series expands. And indeed as long as the seats are jammed and the pot at the end of the race overflows with gold, the manufacturers, tuners and riders will continue to struggle with the stadium bike, and the starting line will be filled with the latest in stadiumcross trickery.

—Terry Whytal

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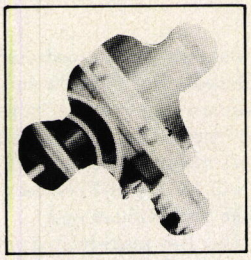
MAKES YOUR R.C. RUN



THE R.P.O. THIRD SYSTEM

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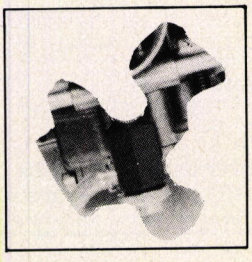
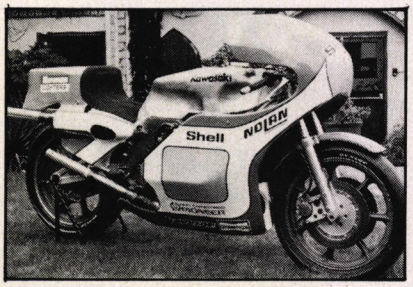


THE R.P.O. THIRD SYSTEM

Pit Bits



• Kawasaki's KR500 roadracer finally has been revealed to the public and as expected its square-four engine resembles two KR250 motors lashed together. Kork Ballington's mount in the 500cc GP championship will have Uni-Trak rear suspension just like his KR250 as well.

• In other Kawasaki-related pavement patter, Neville Doyle received a full-out endurance racer from the factory for Gregg Hansford to ride during Australia's endurance racing season. The Z1000SR showed a sufficient turn of speed in its first outing, although an ignition failure spoiled its chances of winning, but this harbinger of a full-factory commitment to the FIM endurance racing championship is down on power compared to the established Moriwaki Kawasakis.

• More news from Team Green relates to Jimmy Weinert. Disappointed by his "demotion" to the 125 class and disgusted by his poor showing at the Daytona Stadiumcross, Weinert resigned from his seven-year relationship with Kawasaki. He'll be riding a Can-Am in the remaining events of the 1980 season.

• Now that endurance racing rules have been recalibrated to fit production-based engines, Yamaha seems prepared to enter the ring at last. But since the rules prohibit the XS Eleven engine, speculation has focused on the fuel-injected tandem V-4 that has been under development for some time. In addition, it looks like the bike will have shaft drive, for a highly placed Yamaha spokesman recently indicated that the company believes its shaft-drive system will win over enthusiasts only after it's proven on the racetrack.

• Yamaha also wants to stay at the front of the 500cc GP pack, so the new YZR500 transverse four engine incorporates an adjustable intake valve, similar in concept to the variable exhaust valve set-up found on the bike and its production variant, the TZ500. And because Roberts wants to stay at the front of the pack, too, he's hired Gary Howard, formerly a Goodyear vice-president in charge of high-performance and roadracing tires, as his agent.

• Yamaha's Bob Hannah is in the news as well, but only because his chances of taking the saddle in the 1980 AMA 500cc championships look increasingly slim. But while he gives his leg the rest doctors say it requires, he'll drive an off-road buggy in selected SCORE events. Hannah is particularly pleased that four-wheelers do not require the rigorous training that motocross does. There's some speculation that Hannah may decide to give up motocross altogether if his venture into buggies is successful, but some insiders insist that once his leg is healed, Hannah's pride will return him to the motocross wars once again. •

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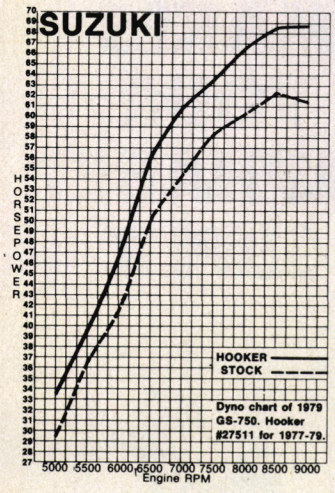

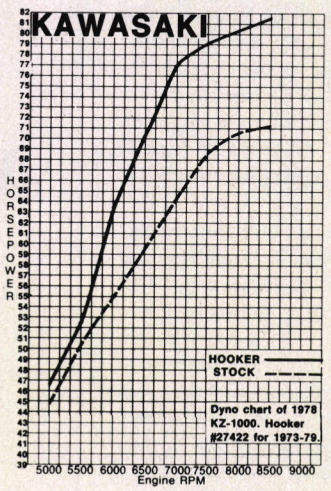

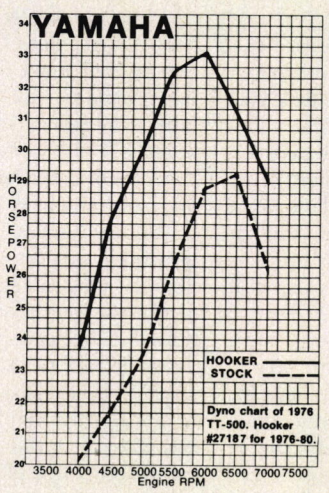

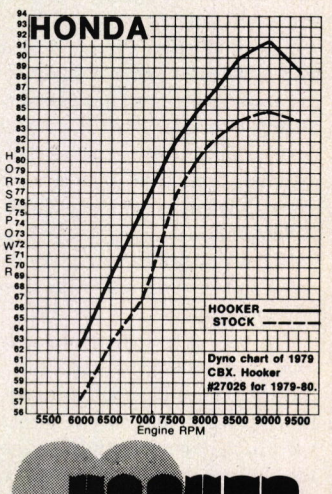

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Putting It (Back) Together

Howerton finds his way back to victory circle.

• Kent Howerton is a remarkable competitor for more than the obvious reasons. He does pilot a motocross bike across nearly any terrain at high speeds—but all the factory pros are fast. He wins a large number of events—but other riders have won many races also. Howerton's greatest claim to fame instead may be that he has come back from the edge of mediocrity and succeeded in rising to the top of the motocross heap. A quick look back at many past champions of the sport shows a pattern of success-injury-defeat. The fine balance between skill, desire and confidence is as easily shattered as a collarbone ... and much harder to put back together. Howerton has done it, and for that alone he is remarkable.

The blond Texan's first trip to the top came on board a Husky 390 in the mid-Seventies. His trademark, fanning the clutch; his destiny, winning the 1976 500cc National championship. His win was the last title for a rider on a European mount, an amazing accomplishment in view of the technology the Japanese factories were building into their bikes even then. Says Howerton, "If I had been riding a bike like DiStefano, back then when the competition was so much less, I could have won many more races—maybe as many as Hannah did in '78."

Suzuki took a liking to the young man from San Antonio and signed him to its motocross team in 1977. It was mostly downhill for the next two years. Recalls Suzuki team manager Mark Blackwell, "Every week Kent had some injury, maybe a sprained ankle or something, and he just wasn't in shape physically and mentally to overcome them. We did two things; we got Kent started on a tougher training program and we got him to realize that desire was important. We told him 'Hey Hannah isn't unbeatable, you're just as fast as he is but Hannah wants to win so bad.' " Howerton explains the problems of the '77 and '78 seasons in his own way, "When you're hurt all the time, you kind of become a little timid and you lose your confidence. I needed a couple of good finishes to regain my confidence, but I couldn't get good results until I had my confidence back."

Despite this classic "Catch 22" problem, Howerton's natural abilities produced a few promising finishes in the '78 season and helped the former champ return to his old form in 1979. The final race season of the decade showcased the Rhinestone Cow-

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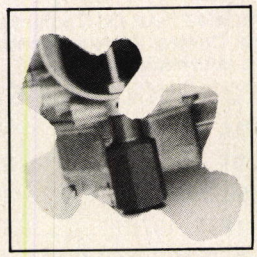

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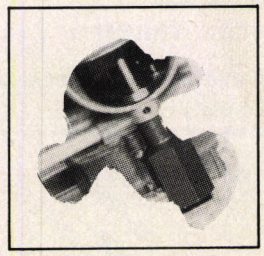

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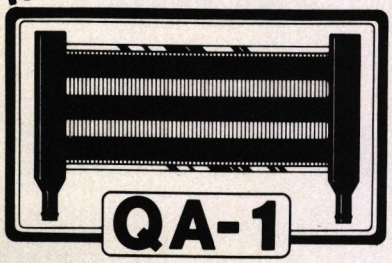

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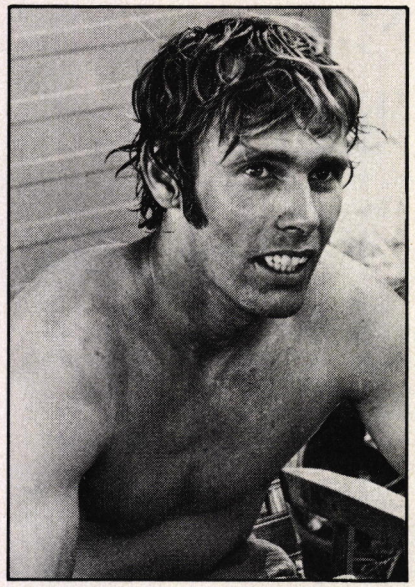

boy's return to the winner's circle. The 250cc National championship was a two-man battle between Hannah and Howerton that went right to the wire, the defending champ barely holding off Howerton's late season charge. Next Kent added the 250cc US Grand Prix title to his list of racing credits, making a stunning last lap charge to do so. The Trans-USA series, held each autumn after the national and world championships are decided, traditionally combines the best riders of the world with the toughest tracks in the U.S. to produce the finest racing in America. The new Champ? Kent Howerton. Howerton closed out the season on top, winning the final stadium race at Anaheim and then dazzling the cameras and spectators en route to victory at the inaugural Superbikers event.

Scott Gillman, Howerton's Suzuki teammate in 1979, explains the turnaround, "Kent's got the mental thing—very straightforward, good attitude, and he's really dedicated. But mostly he's got the psychological advantage because he's been winning everything—before the race even starts half the guys think they can't beat him and he thinks he can't be beat." "When you get used to winning," adds Howerton, "You *really* get used to it. You always want it and think you can always win. The confidence you have in yourself helps very much in racing. I know I can always finish in the top five even when I'm having an off day."

Today's top motocross riders all combine skill and talent. All are mounted on potent race machines. With equal abilities and opportunities for success, what separates the winner from the losers? Perhaps, as in Howerton's case, it is merely intangible confidence and desire. As Blackwell sums it, "Kent is very sure of what he wants and he'll fight all the way to get there. You just know he's not going to give up."

—Terry Whytal

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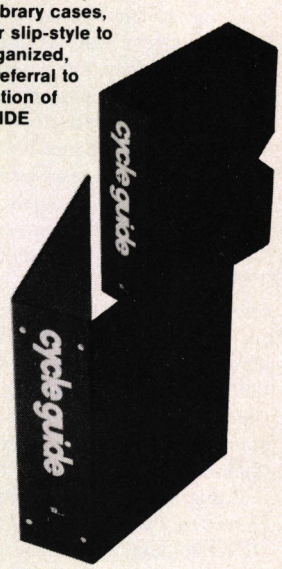

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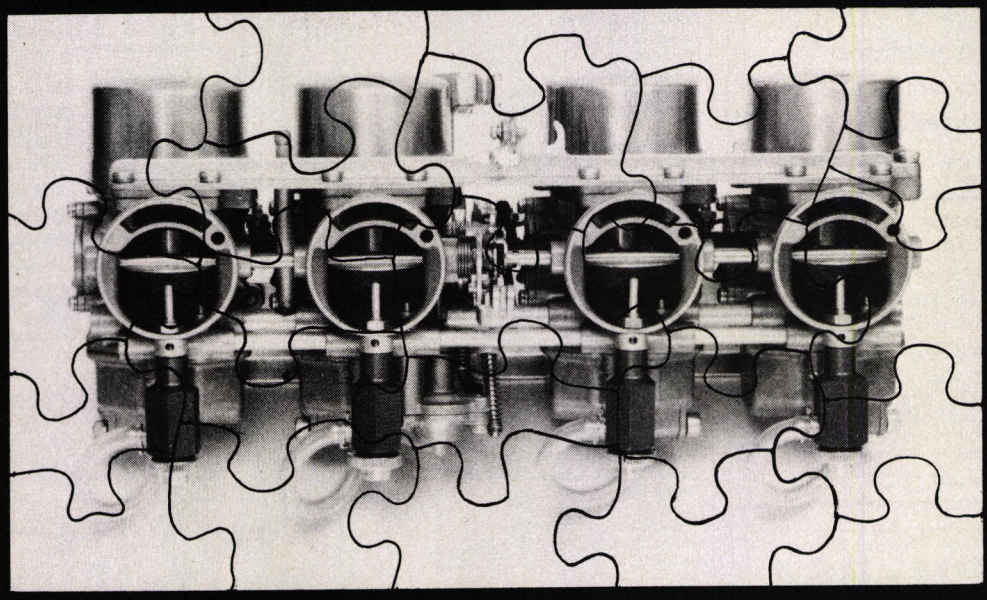

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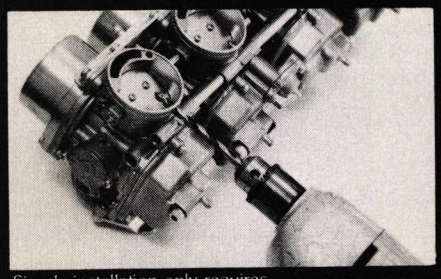
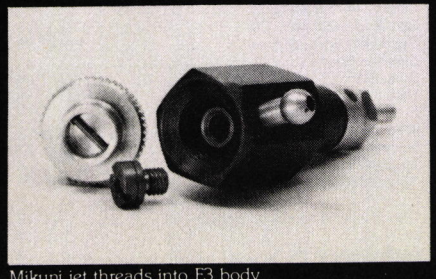


Simple installation only requires drilling one 1/4 inch hole in each carburetor.



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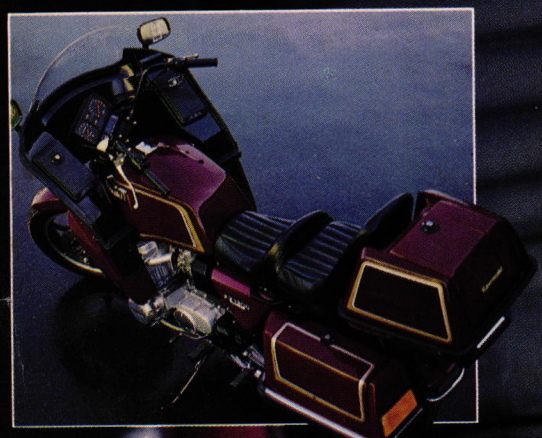

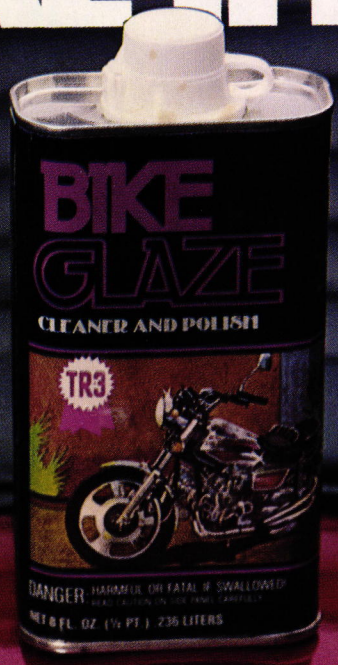

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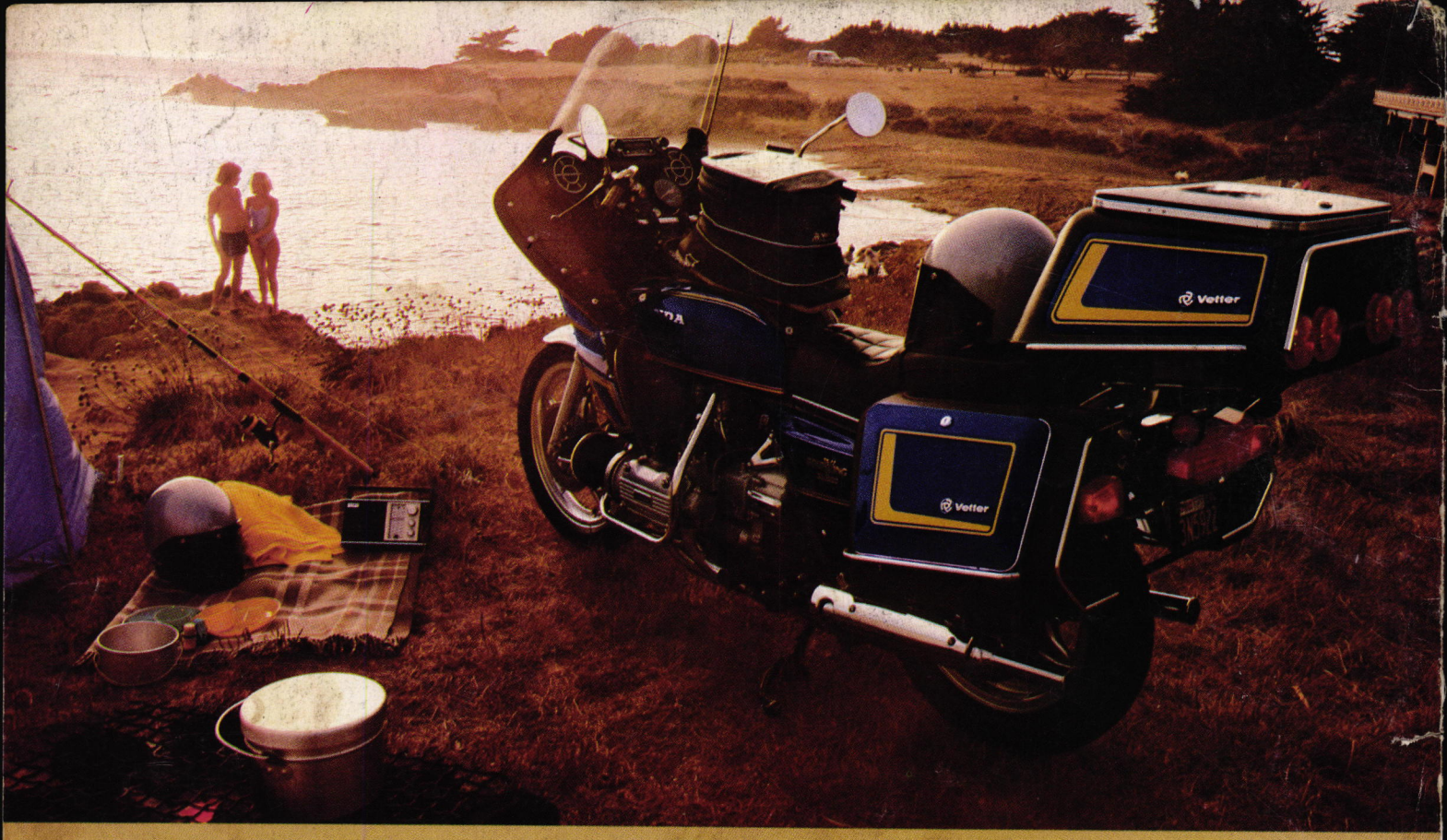

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